Halden Virtual Reality Centre

HVRC CREATE

User Guide

Verification Tool

HVRC CREATE Project Tools



HVRC CREATE

Release 4.2.2

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HVRC CREATE: Verification Tool User Guide.

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1 Overview

1.1 HVRC CREATE

HVRC CREATE 4 is the fourth generation of the CREATE tool suite, and builds on the technical platform and functionality established during the implementation of earlier versions of the software, as well as valuable feedback gained from usability evaluations and research work by the development team.

The CREATE control room design tools combine advanced interactive 3D technology with server-based user, project, and file management, providing an integrated package that supports and traces the various stages of a human-centred design process.

The software has been designed to support a flexible, iterative, design methodology, where a control room design is refined and tested many times before a final design is reached. This contrasts with traditional control room design methods where the design process only goes through one or two human factors review iterations, and where it is necessary to build a costly physical control room mock-up. Design iterations are tracked by the system.

When these virtual reality tools are used, it is not necessary to wait until a physical mock-up has been constructed before commencing design verification and validation against human factors guidelines, so greater emphasis can be placed on finding an optimal design solution for safe and efficient control room operation. Users with a variety of technical skills can operate the software, so control room operators, designers, human factors specialists, engineers and managers can all participate to some degree in the design process.

CREATE provides features designed to support and enhance communication between the various interest groups involved in a design project. Support for communication between the layout designers and reviewers is integrated into the system, while it is possible to extract electronic documents such as models, designs and reports for distribution to other interested parties.

The CREATE tools support the management of a reusable database of 3D objects, the interactive construction of control room layouts, and the validation of control room layouts against guidelines.

The CREATE tools are based on cross-platform Internet and Java technology and open standards such as ISO VRML, DAE/COLLADA, XML, and HTML.

1.2 Verification Tool

When a control room prototype has been constructed using the Layout Tool and has been "published", the Verification Tool can access the 3D layout scene so that verification of the control room layout can be performed.

The Verification Tool is used to verify control rooms with reference to review guidelines. It provides functionality for testing the control room prototype using a 3D model against the guidelines. This can be done interactively through manual measurements and inspections of the layout. This can be assisted by an automated analysis system that tests the 3D model using a knowledge based system that analyses the layout and evaluates it based on rule represantations of the guidelines. Verification Tool also provides functionality for documenting the review process through storing illustrative snapshots of the 3D model, entering reviewer comments, and generating reports.

The user can move freely around the 3D model of the control room to view the model from all angles, check site lines, position manikins, and measure distances between objects and between manikins and objects.

The system architecture supports multiple users so that several reviewers can test the same control room design in parallel without disturbing each other's work.

The user can access data about the layout and can read and input comments about the layout.

2 Getting Started

2.1 System Requirements

The minimum requirements for the HVRC CREATE Tools are:

- Intel Core i5 (8th gen) x64 processor or similar
- 8GB RAM
- 64-bit Microsoft Windows 10 or Apple macOS 11
- Discrete 3D graphics accelerator with at least 2GB memory and OpenGL 3.3 driver support
- For Microsoft Windows: 250MB free disk space for the complete tool suite.
  For macOS: 1GB.
- A three-button mouse (or a two-button mouse with scroll-wheel "button")

The software can be used on less powerful hardware configurations and with two-button mice, but this is not recommended for serious work. Use the option or alt-key on your keyboard in combination with the left mouse button to simulate the middle mouse button if you do not have three mouse buttons.

2.2 Installation

Important: See System Requirements above before installing.

On Windows, the installer called “CREATE Tools Installer” installs whole set of CREATE tools. Double-click on the installer and follow the instructions.

On macOS, simply drag the Verification Tool (or the whole folder enclosing it) from the installation image into your Applications folder.

2.3 Starting the Verification Tool

To run the Verification Tool, open the CREATE directory, which was created when you installed the tools, and double-click on the Verification Tool icon.

Depending on what options you selected when running the installer, you may also be able to start the tool by double clicking on an icon on the MS Windows desktop or by selecting it from the MS Windows Start menu (in the " HVRC CREATE" group).

Important: The first time you run a CREATE tool, a wizard will appear that guides you through configuring your connection to a CREATE Server. After the wizard has completed, you can change your settings via the Preferences Window (see The Preferences Window). Ask your system administrator or project manager for assistance if you do not know what to enter.

The information above assumes that you are using Microsoft Windows. On other platforms, the installation follows the platform conventions to provide easy access to the installed software.

2.4 Support

Please send questions, bug reports, or requests for new features to: create-support@ife.no

When submitting bug reports, please include the following information:

- A description of the result and how it differed from what you expected
- The conditions or circumstances under which the problem occurred
- Any other information that could be useful to isolate the problem, including the version of CREATE you are using, the version of the operating system of your computer, and the type of graphics card you are using. An overview of useful technical information is displayed in the tool’s About dialog, located in the Help menu, and can be copied into an email or saved to disk in a text file.

2.5 User Identification

Before you can use the Verification Tool to do any work, the server administrator or your project manager must have assigned a login name and password to you. If you do not have a login name and password then contact the server administrator or your project manager for assistance.

When the Verification Tool starts up and needs to retrieve data from the server, it will usually request that you enter your login name and password. If this does not occur then you should check that the CREATE server address has been correctly set (See The Preferences Window). If the server address is correct then you should verify with your system administrator or project manager that the host is currently operating and accessible on your network.

You will not be able to use the Verification Tool to do anything other than access items in the Help menu and specify the server address in the Preferences Window if you are not logged on to a CREATE server.

Important: After a successful login, you can enable an auto-login feature via the Preferences Window so that you do not need to enter your username and password each time.

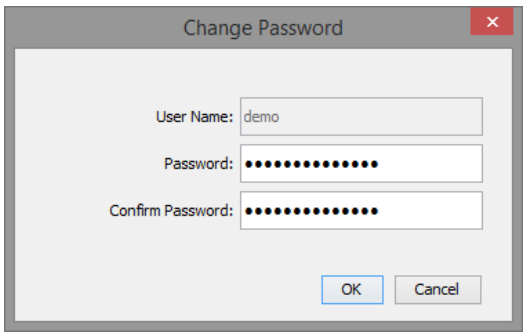
2.6 Changing Your Password

You can change your password via the Edit > Set Password… menu item. For security reasons, you should change your password regularly and use a password that is difficult for other people to guess.

You must be logged on to a CREATE server in order to change your password.

To change your password:

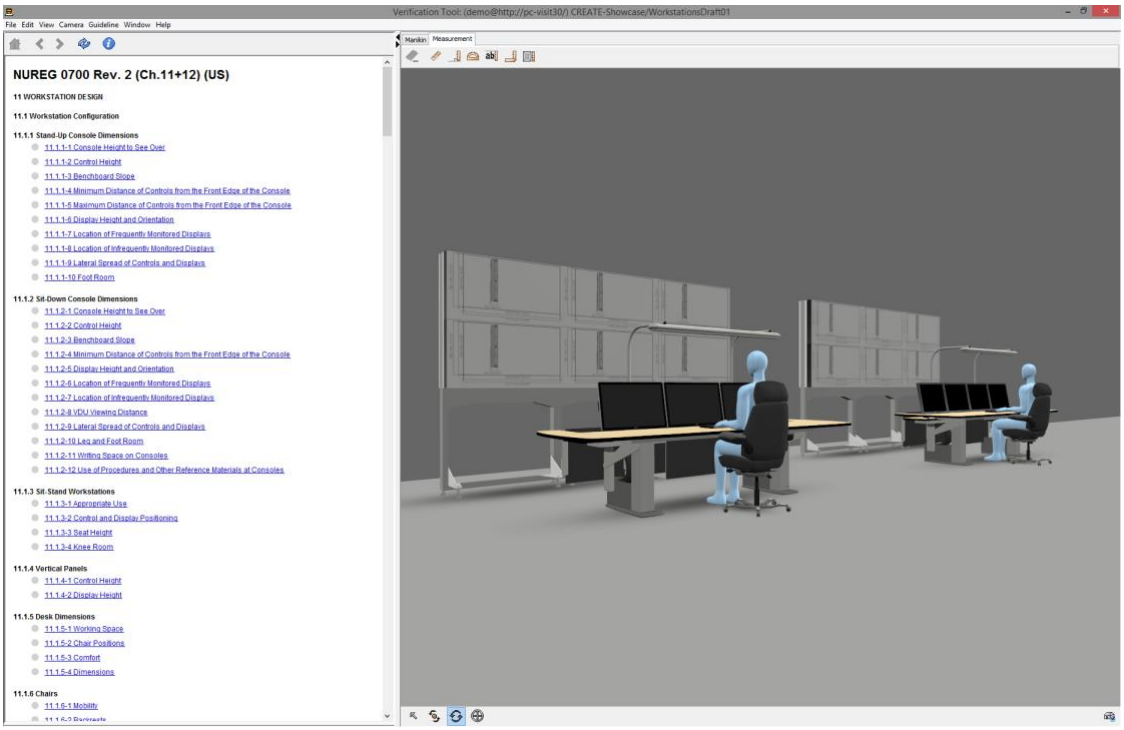
1. Select Edit > Set Password…
2. The Change Password dialog will appear:



The Change Password Dialog

3. Enter a new password into the Password field
4. Enter the new password again in the Confirm Password field
5. Click on OK to commit the change or Cancel to abort

2.7 Overview of the User Interface



The Verification Tool

The primary user interface of the Verification Tool consists of a large window with the main features of the Tool easily accessible.

At the top of the window is the main menu bar (See Menus).

The left side of the window contains the Guideline Panel. This panel displays either an index page containing the available guidelines for a verification context, or an individual guideline (see Browsing Review Guidelines). In the image above the index page is shown. When a specific guideline is shown the panel will display the guideline in addition to various tools used for reviewing, such as a comments panel, snapshot overview, list of procedures and the result from the automated tests. At the top of the guideline panel is a toolbar that is used for navigation between guidelines. The review process is covered in more detail in Reviewing a Layout.

The panel to the right consists of the 3D scene in which layouts are displayed and two toolbars. The upper toolbar holds mainly toolsets for working with the 3D scene, like measurement and manikin tools, while the lower toolbar provides support for navigation in the 3D scene.

The dividing bars between these panels can be used to adjust the relative size of the panels.

3 Reviewing a Layout

Each reviewer assigned to a project has an individual review context per layout, so several reviewers can make independent reviews of the same layout.

You, the reviewer, can access any published layout within a project in for which you have been assigned a reviewer role. Once a published layout has been opened, you can step through the review guidelines, testing the layout against each guideline. The system will also perform automated analysis of the layout, checking it against each guideline. Review comments can be entered for each guideline and the review status of each guideline is set before proceeding. Review comments can be supported with snapshot images of the layout, with whichever 3D testing tools are active shown. Thus a snapshot of a room layout with various measurements shown, or a manikin with a view cone, for example, can be stored together with the review text.

At any time, you can view a report where guidelines can be listed with comments and snapshots depending on their review status.

The result of your review work can be viewed by you, the project manager and the designer of the layout reviewed. Thus, the layout designer can create and improved design, if necessary, based on your review comments.

You can create and save reports, as well as snapshots and a plan view of the layout. These can be distributed to other people who are not users of the system.

You can communicate with other designers, reviewers, and the project manager using a messaging system built into the Verification Tool.

3.1 How to review a layout

Once a published layout has been opened in the Verification Tool, you have access to your personal review context, within which you perform your review work.

Normally you would start with the first guideline in the guideline set that is loaded by the Verification Tool when you access a published layout. You test the layout against the recommendations of the guideline using the 3D model and various test tools that support typical testing tasks. The system will also perform automatic analysis of the 3D model for the guideline, and suggest a status for the guideline. You then enter any comments related to the guideline and set the status (e.g OK) of the guideline before proceeding to the next guideline until all guidelines have been checked. The guideline set index page lists all of the guidelines in the guideline set that the project manager has selected for use in the project, and also indicates the review status so that you can easily see which guidelines you have checked should you choose to review them out of order or over the course of several sessions.

Review comments can be supported with snapshot images of the layout, with whichever 3D testing tools are active shown. Thus a snapshot of a room layout with various measurements shown, or a manikin with a view cone, for example, can be stored together with the review text.

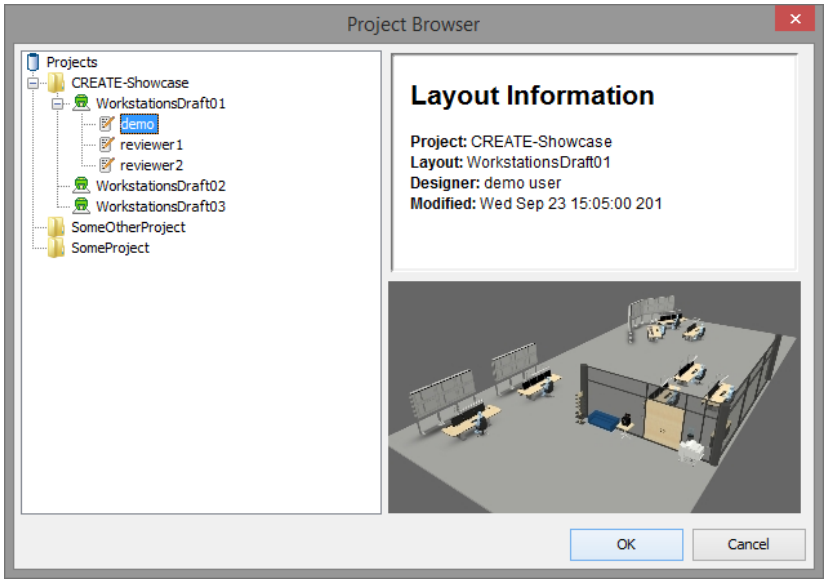
All review comments and snapshots you enter are stored and can be used to generate reports.

3.2 Creating a review context

The first time you access a published layout for review, a new review context is created automatically for you to work in. Each reviewer has an independent work context so the work you do will not affect any reviews done by other reviewers. The project manager is permitted to view all contexts and thus compare reviewers however, unless you are also the project manager, you can only access your own work.

To create a new review context:

1. Select File > Open…
2. If a login window appears, enter your user name and password for accessing the CREATE server. If you are successfully logged in then the Project Browser will appear:



Project Browser, with a layout selected.

3. Using the tree on the left side of the Project Browser, select the layout that you wish to review. You may need to click on one of the handles next to the project name to see all of the layouts associated with a project in order to find the layout that you intend to work with. Information about projects or layouts can be viewed by selecting them, and appears on the right side of the Project Browser.
4. Press OK to open the layout and start working, or Cancel to close the Project Browser without opening a layout.

3.2.1 Viewing information about a project or layout

You can view information, such as the project name, designer, and creation date for a layout or the name and manager of a project using the Project Browser as described in Creating a New Review Context. Select the item you want to view information about, but press Cancel to dismiss the Project Browser rather than OK to open a different layout.

The information provided includes details about the name of the project, name of the version, who the designer is and when the design was last modified.

To view information about a project or layout:

1. Open the Project Browser using File > Open… or use the shortcut keys command-O
2. Select the project or layout you want to view information about
3. Information, including a snapshot for layouts, appears on the right-hand side of the Project Browser window.

Press Cancel when you have finished browsing (or OK if you want to open a selected layout or create a new one).

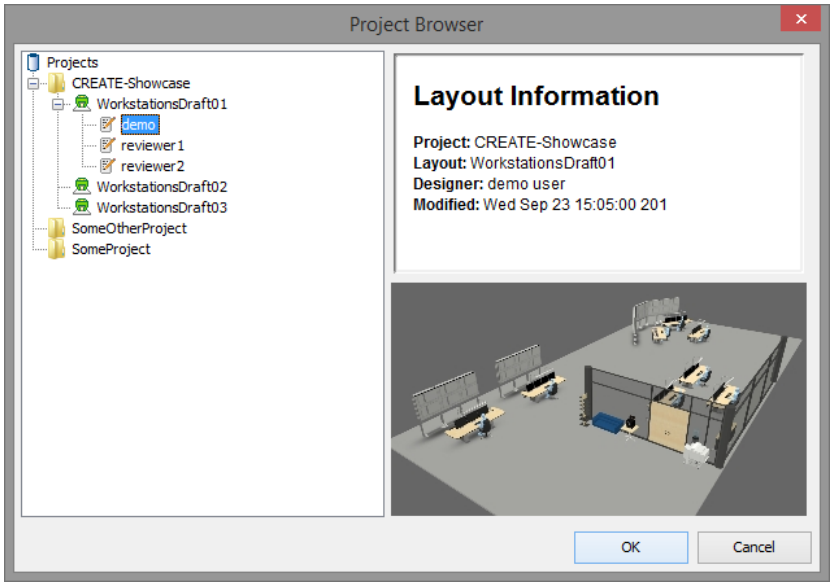
3.3 Opening an existing review context

Opening an existing review context that you have previously worked on is done in the same way as creating a new context, except that when you open the Project Browser and browse the project-layout tree, it is possible to select either the layout or your review, which is available under the layout in the tree.

If you select the layout rather than your review then it is assumed that your review is the one you wish to open. This is important for project managers that are also reviewers as, unlike ordinary reviewers, they can open review contexts created by other user for layouts created for projects they manage, however they cannot modify the reviews of other reviewers. See Project Manager Privileges for more information about this.

To open an existing review context:

1. Select File > Open… or use the shortcut keys command-O
2. If a login window appears, enter your user name and password for accessing the CREATE server. If you are successfully logged in then the Project Browser will appear:



Project Browser, with a review selected.

3. Using the tree on the left side of the Project Browser, select the layout that you wish to review. You may need to click on one of the handles next to the project name to see all of the layouts associated with a project in order to find the layout that you intend to work with. Information about projects or layouts can be viewed by selecting them, and appears on the right side of the Project Browser.
4. Press OK to open the layout and start working, or Cancel to close the Project Browser without opening a layout.

3.4 Saving a review context

Use the save function to save the current work you have done on the review context. It is important to save regularly in order to prevent data loss. Anything that has not been saved when exiting will be lost.

Saving a review context:

1. Select File > Save in the menu or use the shortcut keys command-S

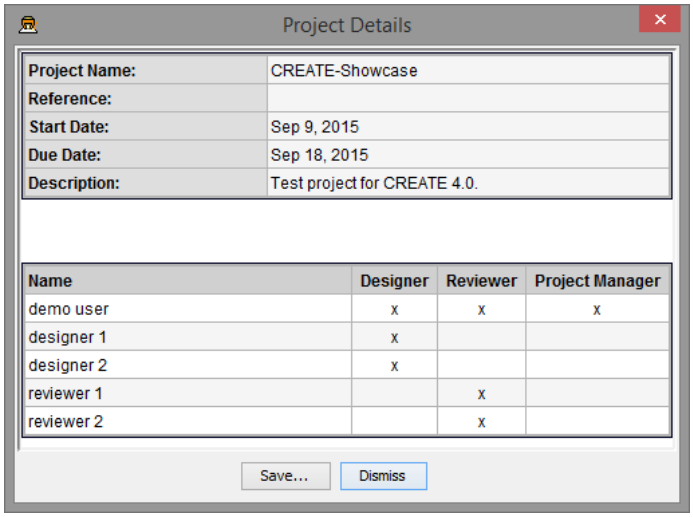
3.5 Viewing information about the current project

Information about the project that the layout you are working on belongs to is available to you and can be viewed, saved to file or printed.

The information available includes the name of the project, the name of the project manager, the date that the project was created as well as an overview of project team members and their roles.

To view information about the project that the layout you are reviewing belongs to:

1. Select the Window > Project Details
2. The Project Details window appears:



Project Details

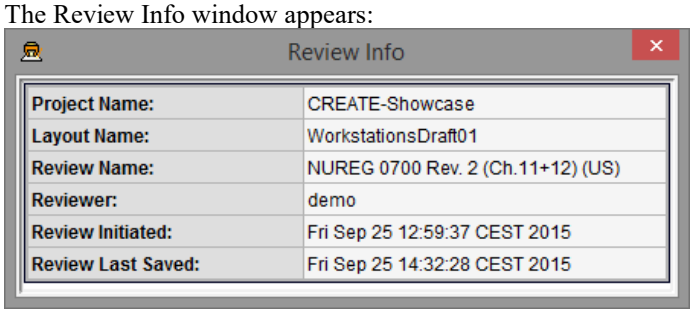
3. Press Save… to save a copy of the details to disk in HTML format or Dismiss to close the window.

3.6 Viewing information about the current review

Information about the current review is available to you. The information includes the name of the project, name of the layout, name of the review guideline set, name of the reviewer, when the review was initiated and when the review was last saved.

To view information about the current review:

1. Select Window > Review Info
2. The Review Info window appears:



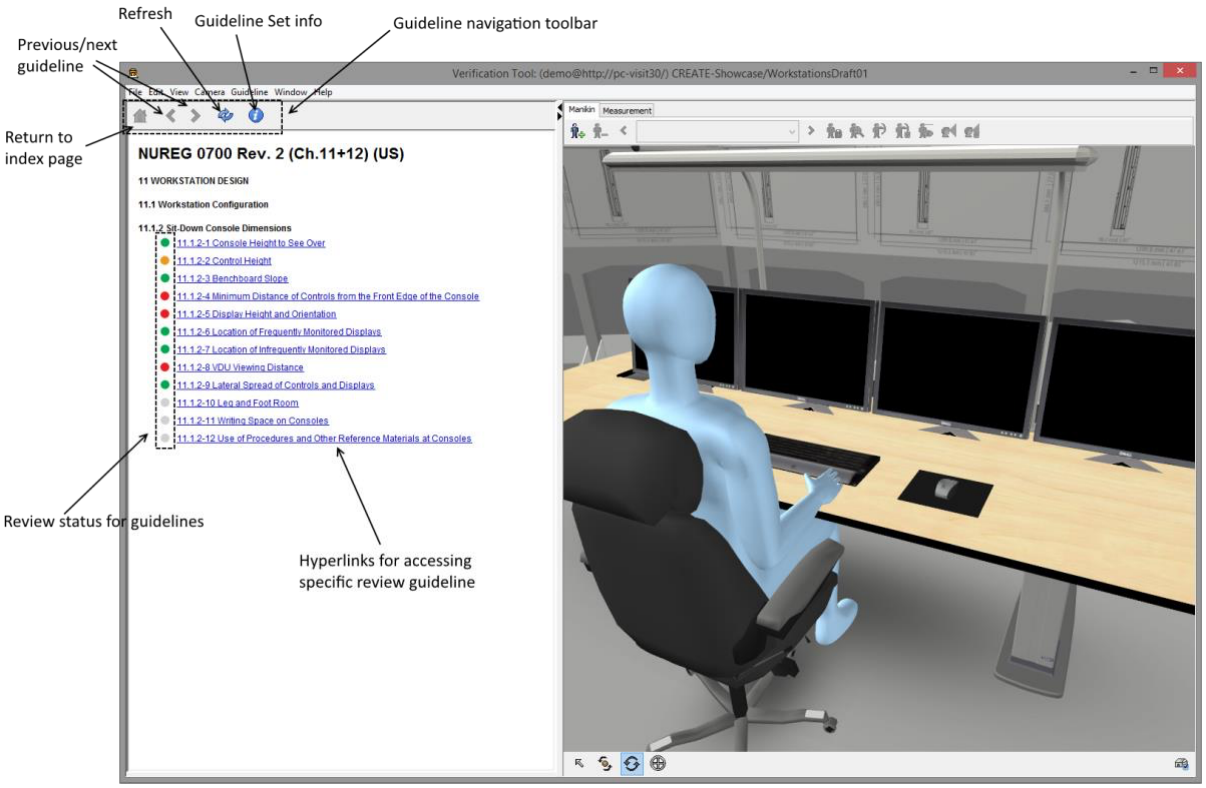
3.7 Browsing Review Guidelines

When you first open a review context, the 3D model of the layout is loaded and the guideline set index page is shown. You can access individual guidelines by clicking on the hypertext links on the index page.

Once you are viewing an individual guideline, you can use the toolbar above the Guideline Panel to return to the index, browse between guidelines, reload a guideline or index. Shortcuts are provided in the Guideline Menu.

Note that only the Reload and Info button in the toolbar are active while you are viewing the index page.

When you access an individual guideline, any existing review comments and snapshots associated with the guideline are loaded and displayed in the Reviewer's Comments and Snapshots panels.



Verification Tool with guideline set index shown with Reload button active

To go to an individual guideline from the index page:

1. Click on the hyperlink representing the guideline that you want to access

To go to the index page from an individual guideline:

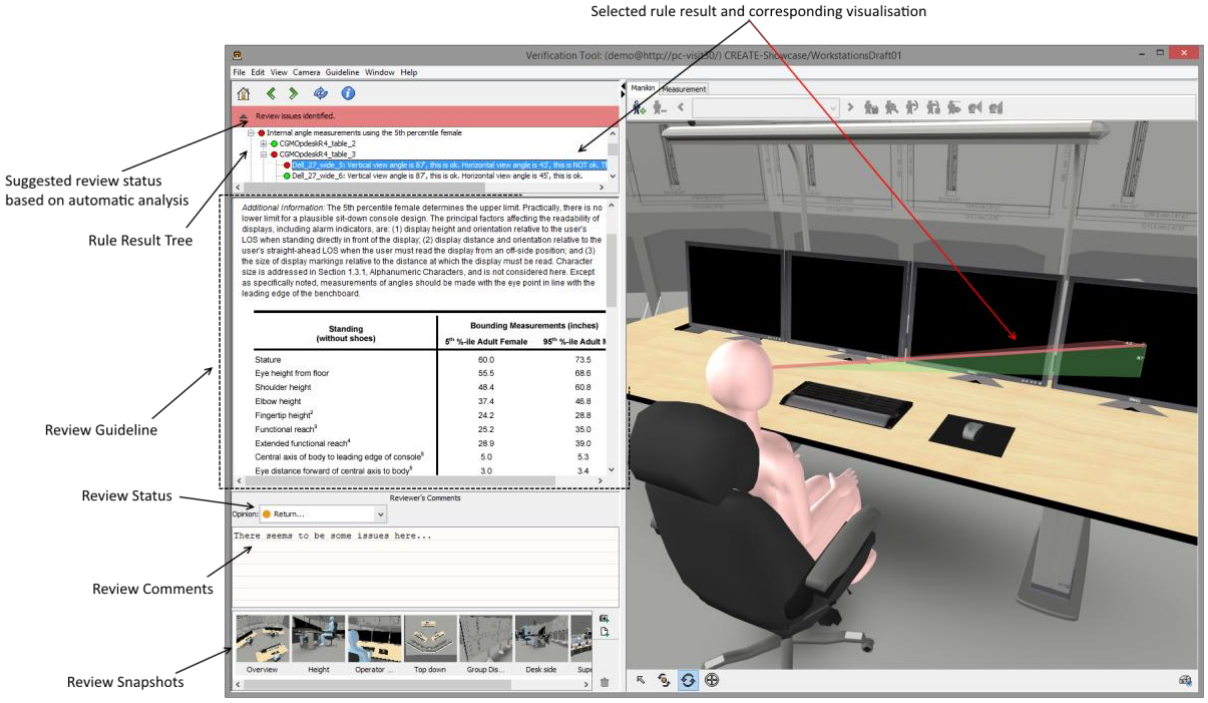
1. Click on the Home button

To go to the previous or next guideline from an individual guideline:

1. Click on either the Previous or Next buttons

To reload an index page or individual guideline with associate procedure:

1. Click on the Reload button



Verification Tool with review guideline

3.8 Viewing a review procedure for a guideline

If a procedure, explaining how to test an individual guideline is available then it is displayed automatically in a panel below the Guideline Panel.

You cannot modify text in the Procedure panel. The Guideline Tool is used to write procedures.

3.9 Entering reviewer comments for a guideline

When checking a layout against a guideline it is normally appropriate to enter some commentary, in addition to setting the review status. Comments are entered in the Reviewer Comments Panel.

Comments can be modified by editing existing comments and saving the changes.

You can cut, copy and paste text in this panel using the usual keyboard shortcuts for this (typically, control-X, control-C, and control-V). Control-Z can be used to undo changes, before saving them. A pop-up menu with cut, copy and paste function which can be accessed by clicking in the text area with the right mouse button pressed down.

To clear all text from a comment, select the text, press delete (or backspace) on your keyboard and then save the empty text.

To enter a comment for a guideline:

1. Click in the text area of the Reviewer Comments Panel and enter your text.
2. Select File > Save in the menu or use the shortcut keys command-S to save

3.10 Automated Testing of the Virtual Layout against Review Guidelines

Verification Tool features a rule based knowledge system that can perform automatic analysis on the layout. Based on the analysis it can give a suggested verification status for the review guideline. This is meant as an assisting tool for the reviewer to help the reviewer perform the verification with more efficiency by having the system automatically perform tedious measurements with greater accuracy.

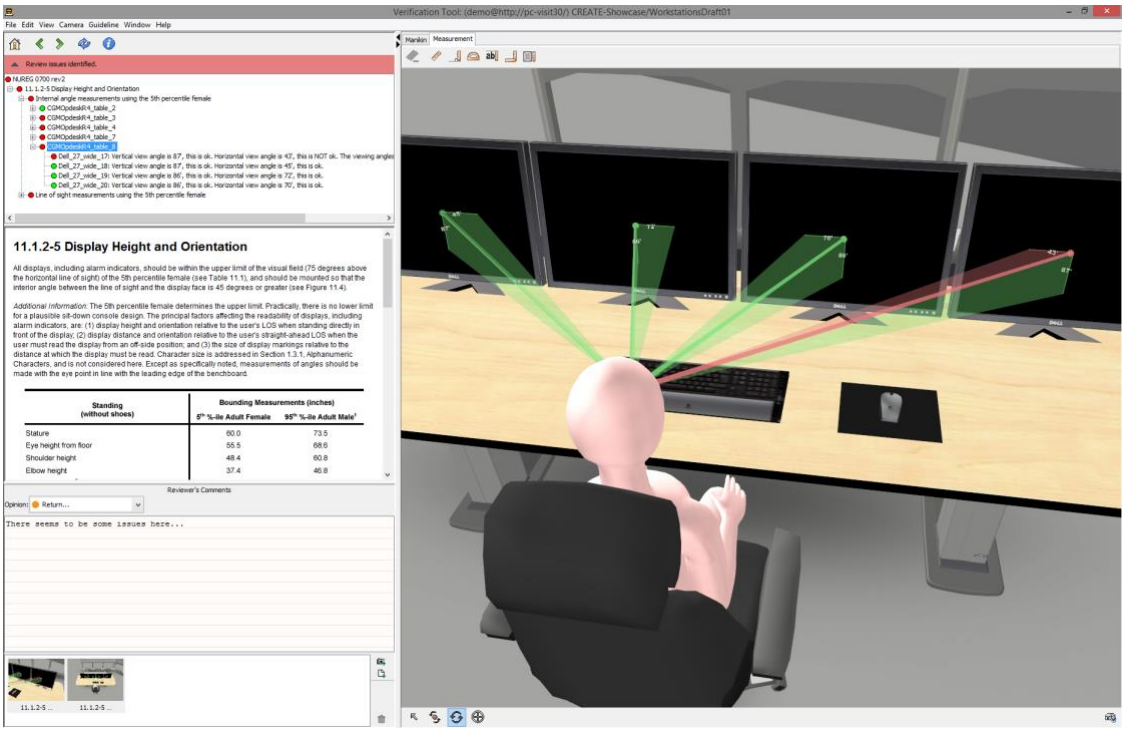
The automated analysis of the virtual layout uses a rule based knowledge system. For each review guideline it breaks down the guideline into steps that needs to be verified in order to suggest a status for

the guideline. This is expressed through rules, which typically are very simple and specific. A rule can for example be a distance check between the user and a monitor to determine the viewing distance. Other examples include checking objects are within the users field of view, whether certain objects exists in the layout (i.e. escape signs), manoeuvring space etc. By combining these simple atomic rules they can together be used to check a much more complex review guideline.

The system will suggest a status for the review guideline (see Status Result from Automated Testing), but the reviewer is required to manually set the status. In addition to the suggested status a detailed result can be shown, which is presented in the form of a tree structure of the rules. This shows what has been tested, which objects have been tested, and the status for each test at various levels (see Rule Result Tree).

Most of the rule results have an associated visualisation that can be shown in the 3D view. The visualisation is shown by simply selecting the desired result in the result tree. Multiple items can be selected at once by holding down the command or control modifier.

If the review guideline is supported by the automated testing system a panel will be shown below the navigation toolbar in the guideline panel, just above the actual guideline description. If the review guideline is not supported by the system the panel will be hidden.



Verification Tool with automated test results shown for a review guideline, visual representation of test is shown in the 3D view

3.10.1 Status Result from Automated Testing

The status bar displays how the automated system evaluated the layout against the review guideline. The status bar is colour coded to reflect the status of the analysis, and also contains a text description of the status. There are three different statuses that the system can conclude with, these are:

- Green – everything is ok
- Red – there were identified some issues, needs to be investigated
- Grey – insufficient information in the layout to perform the test

If the status is Grey this is usually because the layout has not been enhanced with enough meta data for the automated analysis to be able to test it. Consult with the Layout Tool user documentation for more information on associated meta data through tags.

The status bar also contains an arrow to the left of the text description that can be clicked to hide/show the rule result tree. By default the result tree will only be shown if the result from the analysis indicate issues with the virtual layout.

3.10.2 Rule Result Tree

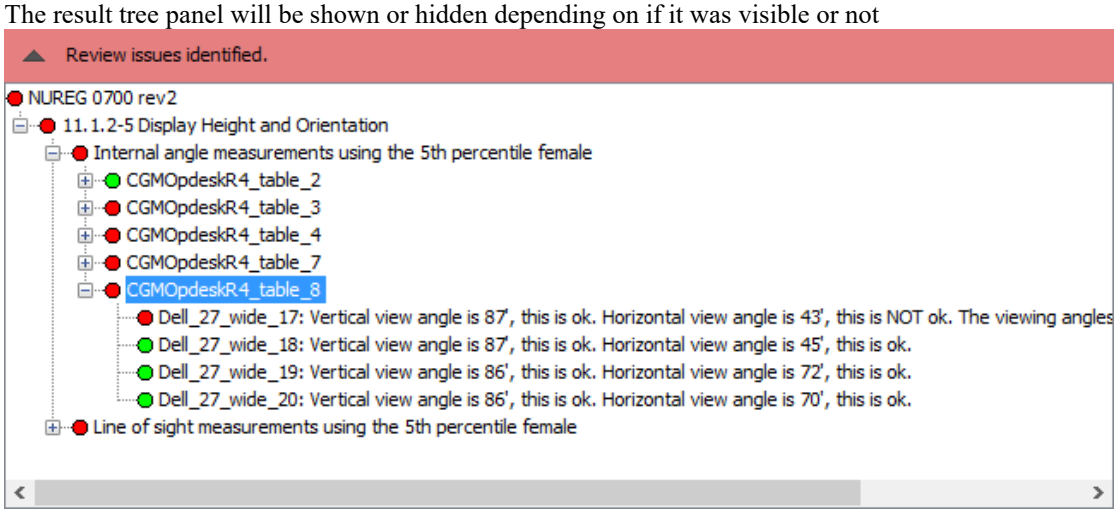
The rule result tree contains a tree structure with all the information from the automatic analysis for the review guideline. The result tree can be shown or hidden by selecting the arrow icon in the status bar.

Show/hide rule result tree:

1. Press the hide/show arrow to the left in the status bar



2. The result tree panel will be shown or hidden depending on if it was visible or not



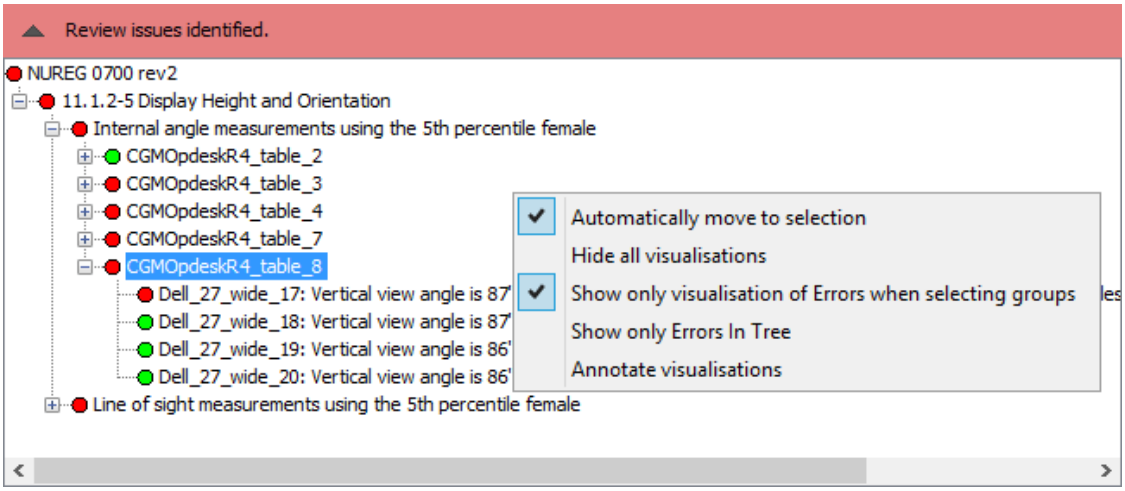
The result from the automatic analysis is presented in a tree structure. Items in the structure can be selected by clicking on them, and the children of each item can be shown or hidden by pressing the "+" and "-" icon to the left of the item. The tree is structured with more general information higher up in the tree. Usually at the top level the name of the guideline set will be displayed, followed by the review guideline in question. The result tree can also be navigated using the arrow keys on keyboard.

To the left of each item is a status indication that displays the evaluation status for that element. For elements with child elements this will display the aggregate of the status from the children. This is prioritized based on status type, where red errors have top priority. If at least one child is an error then the sum status showed for the parent will be red, even though all the other children were evaluated to green. This is because the most important goal of the automated analysis is to identify potential issues, so this behaviour is to prevent potential issues from being hidden from the reviewer by always defaulting to the worst case result.

When an item is selected in the result tree a visualisation corresponding to the element will be shown in the 3D view. This is a visual representation of the test. If a group element is selected (i.e. an element with children) then it will display an aggregate visualisation describing the sum of the child element visualisations, or in some cases just all the child visualisations. It is possible to set the 3D view to automatically follow the selection in the rule result tree, so that the camera will automatically transition to a position that guarantees that the selected visualisation is visible in the 3D view (see Customizing behaviour of Rule Result Tree).

3.10.3 Customizing behaviour of Rule Result Tree

The behaviour of the Rule Result Tree can be configured by accessing a popup menu. The popup menu is opened by right clicking anywhere in the rule result tree panel.



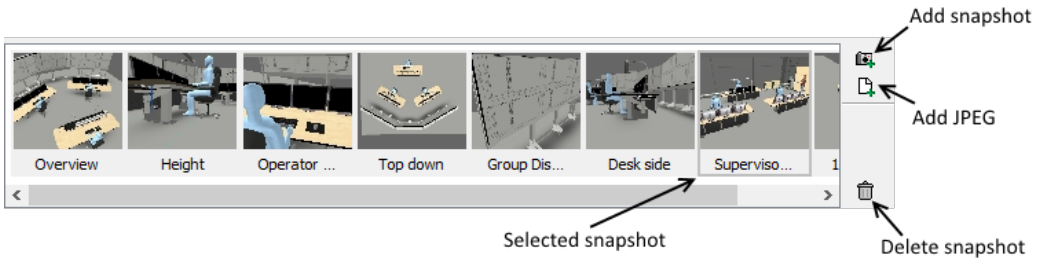
Rule Result Tree popup text

The available actions are:

- Automatically move to selection: This will automatically transition the camera to look at the visualisation in the 3D scene of the currently selected result in the tree structure
- Hide all visualisations: This will toggle if visualisations of the rule results should be visible or not. If set to hide then no visualisation will be shown if you select a result in the tree structure
- Show only visualisation of Errors when selecting groups: This will toggle if only error visualisations should be shown when you select group nodes in the result tree. This can be useful for not cluttering the 3D scene with visualisations that are not of interest (i.e. you are generally only interested in what is not ok)
- Show only Errors In Tree: This will filter the entire rule result tree to only contain the error results, effectively hiding everything that is ok. This is useful if you only want to navigate the errors and not have the structure cluttered by the elements that are ok
- Annotate visualisations: This will show a text label pinned to the objects and in some cases the visualisations in a result to make it more explicit which objects are involved

3.11 Working with snapshots

Snapshots are images associated with reviewer comments and are used to explain and illustrate the comments. They are normally snapshot images of the 3D view, but can also be other image files added to a review, such as photographs, diagrams, or screen shots. The snapshot panel is located at the bottom of the Guideline Panel. Snapshots are only available when a Review Guideline is opened.



Overview of the Snapshot panel

3.11.1 Adding a snapshot to a review

You should normally add one or more snapshots to your review comments in order to illustrate your review. Snapshots are shown as thumbnails in the Snapshots panel when you access a guideline. You can enter labels for the snapshots that you can refer to from your review comments text.

The snapshot functionality is only available when you are viewing a review guideline. You can however still take screenshots of the 3D view that you save on the local file system (see Creating a snapshot of the virtual layout), but you cannot store any snapshot to the server when you are not working directly on a specific review guideline.

Note that review snapshots are not saved to the server until you save the Review Context (see Saving a review context).

When a report is generated, the snapshots with labels appear below your review text. Snapshots are automatically labelled with the name of the guideline they are associated with. To change the label double click on the image, and change the text directly in the window that is opened. See Viewing snapshots associated with a review for information about viewing, saving to disk, and modifying its label.

To add a snapshot image of the current 3D view to a review:

1. Press the Snapshot button in the snapshot panel while viewing a review guideline.



The snapshot button is located to the upper right of the snapshot panel

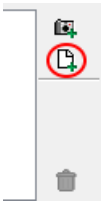
2. Alternatively to 1. a snapshot can be created using the menu Guideline > Add Snapshot or the shortcut keys command-T
3. A thumbnail representing the snapshot will appear in the Snapshots panel.



A newly-created snapshot in the Snapshots panel

To add a JPEG image from the local file system to a review:

1. Press the JPEG button in the snapshot panel while viewing a review guideline, or drag a JEPG image file (with extension ".jpg") from the local file system onto the Snapshots panel, and drop it on the panel, while viewing a review guideline.



The JPEG button is located to the upper right of the snapshot panel

2. If the JPEG button was clicked then a file open dialog is shown where you have to choose the JPEG file to add.
3. A thumbnail representing the image will appear in the Snapshots panel.

3.11.2 Viewing a snapshot associated with a review

Snapshots associated with reviews are represented as thumbnail images in the Snapshots panel.

To view a snapshot at full size:

1. Double click on the thumbnail of the snapshot you want to view in the Snapshots panel.
2. The Snapshot window appears:



Snapshot Window

3. The text below the snapshot is editable, and can be changed simply by selecting it and replacing it with the desired text
4. To delete or export the snapshot right click anywhere on the snapshot
5. The popup menu appears:



Snapshot Window

6. Select Delete to delete the snapshot, or select Export to save the image to the local file system. Export will display a save file dialog.

3.11.3 Changing the label for a snapshot

Snapshots are shown as thumbnails in the Snapshots panel when you access a guideline. You can enter labels for the snapshots that you can refer to from your review comments text.

When a report is generated the snapshots, with labels, will appear below your review text. Snapshots are automatically labelled with the name of the guideline they are associated with. To change the label double click on the image, and change the text directly in the window that is opened. See Viewing snapshots associated with a review for information about viewing, saving to disk, and printing a snapshot, or modifying its label.

To set or change a snapshot label:

1. Open the Snapshot window (See Viewing snapshots associated with a review)

2. Edit the text in the text input field below the image.
3. Close the Snapshot Window to store the new label.

3.11.4 Deleting a snapshot

Should you wish to delete a snapshot from a review then you can do so by either selecting it and pressing the delete button, or viewing the snapshot in the Snapshot Window.

When you delete an image, it is permanently removed from the server.

Deleting a snapshot cannot be undone.

To delete a snapshot from a review using the snapshot panel:

1. Select the snapshot you want to delete in the snapshot panel by clicking on it once:



Snapshot Panel with the snapshot to delete selected

2. Press the Delete button in the snapshot panel:



The Delete button is located to the lower right of the snapshot panel

To delete a snapshot from a review when viewing the snapshot in the snapshot window:

3. Open the Snapshot window by double clicking on the snapshot in the snapshot panel (See Viewing snapshots associated with a review)
4. Right click anywhere on the snapshot in the window
5. Select Delete from the popup menu

3.12 Setting review status for a guideline

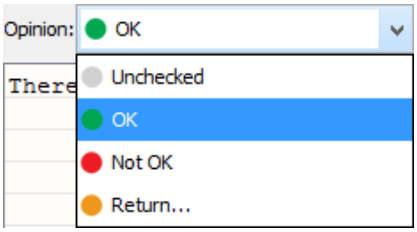
Once the testing of a layout against a guideline has been completed, you should set the guideline status. The guideline status indicates the extent to which the layout meets the guideline.

The guideline status is set using a drop-down menu that is located in the Reviewer's Comments panel, just above the field where the review comments can be entered.

The guideline status is indicated graphically in the guideline set index and is used to control the generation of reports.

To set the review status of a guideline:

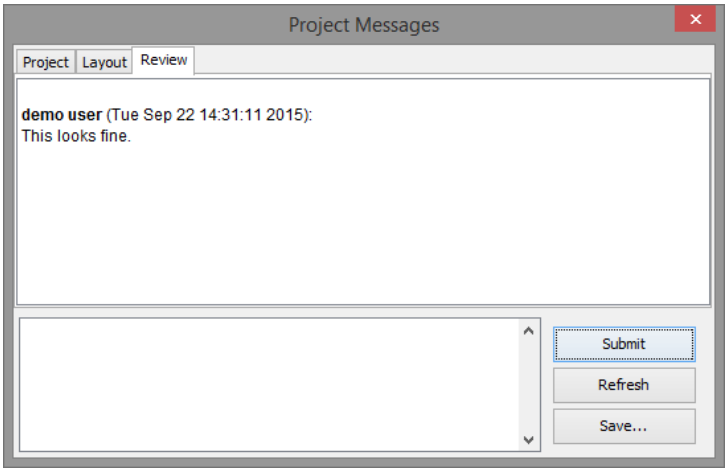
1. Select the appropriate status label from the Guideline Status drop-down menu above the Guideline Panel. Click on the menu to open it and then click on the required label.



The guideline status drop-down menu

2. It is important to save the review context after finishing reviewing a guideline to prevent data loss (see Saving a review context)

3.13 Communicating with other project team members



The Project Messages window with Review level active

The Project Messages functionality provides a simple way of communicating. Messages can be read by Project Management Tool, Layout Tool, and Verification Tool users. All messages are logged by the system and stored as part of the project data.

- **Project** level messages can be read by everyone in the project team. This would typically be used by the project manager to provide information to everyone.
- **Layout** level messages can be read by designers and reviewers while working with a specific layout. For example, a reviewer can write comments to the layout designer here, and the designer can reply.
- **Review** level messages can only be seen by reviewers of a layout and is useful if there is more than one reviewer that needs to communicate with each other.

To communicate with other project team members:

1. Select Window > Project Messages to display the project message window.
2. Select the level you want to discuss on by pressing a tab in the top of the window.
3. Write your message.
4. Press Submit to enter the comment.
5. If you would like a local copy of the messages in HTML format, press Save to save the messages to file.
6. Press Refresh to reload the messages and view any new messages that may have been entered by other team members.

3.14 Printing the current guideline data

The Verification Tool supports printing of the current guideline and review, or the guideline set index, to any printer configured on your computer. Note that the dialog windows shown by the Verification Tool will depend on the operating systems you are using, so the actual dialog window on a computer running Mac OSX will differ from the equivalent dialog window on a computer running Windows.

To set up the page:

1. Select File > Page Setup…
2. Choose the required settings and confirm or reject your changes

To print the current guideline and review or the guideline set index:

1. While viewing the item you wish to print in the Guideline Panel, Select File > Print…

2. Choose the required settings. To ensure correct results, do not select orientation using the print dialog (Use File > Page Setup… instead)
3. Continue (typically, click on OK) or abort (typically, click on Cancel)

4 Working with a virtual layout

Once a review context for a published layout has been created or opened, the 3D view displays a virtual layout that you can use to test the layout against design review guidelines. The layout is an interactive three-dimensional model of the room. You can move around the model using a mouse and a selection of useful 3D tools are available to you to assist you in reviewing the layout. However, you cannot modify the contents of the room or move items in the room around.

4.1 Overview of the 3D view user interface



The 3D view with toolbars and a room layout loaded

The screenshot above shows the 3D view part of the Verification Tool user interface, with upper and lower toolbars and a virtual layout. The upper toolbar contains a selection of tools that are useful for testing the model and retrieving information about it.

The tool sets available include:

- **Manikin Tools** – which are used to place virtual humans in the layout to test lines of sight, reach, human access, and so forth. There is normally a variety of manikins available from the server that can be used to test the layout, including standing and sitting manikins of various heights. See Using the Manikin Tools for more details.
- **Measurement Tools** – which enable you to make multiple measurements in the layout to check distances and angles, but also to visualise areas of readability for labels and areas within a specific point can be seen. See Using the Measurement Tools for more details.

The lower toolbar contains navigation controls (on the left) and direct access to the room configuration (on the right). See Interaction and Navigation in a virtual layout and Snapshot and Room Configuration for details.

4.2 Interaction and Navigation in a virtual layout

There are primarily two different categories of modes that affect how you interact with the virtual layout; these are **Interaction modes** and **Navigation modes**. The interaction modes change how you interact with the 3D objects in the layout, while the navigation modes change how you navigate the camera around in the layout (i.e. moving around).

The different navigation modes are **Orbit**, **Fly**, and **Pan**.

The different interaction modes are **Pick** and **Rotate**.

The navigation toolbar contains buttons for the most commonly used functions and provide useful information when working in the virtual layout. The toolbar contains four buttons (from the left): **Pick**, **Rotate**, **Navigation mode** (currently: **Orbit**), and **Seek**. This gives you quick access to changing between the two interaction modes and the navigation mode. It is also useful for keeping track of which mode is active. The navigation mode button changes icon depending on which navigation mode is active. To quickly switch between various navigation modes there are keyboard shortcuts, which will be covered in the following sections. Lastly the seek button allows the camera to quickly move to a location that the user selects in the 3D scene.



The main Navigation Controls in the 3D View lower toolbar

The Camera menu contains additional functionality used when navigating the camera in the 3D view, these will be covered in the following sections.

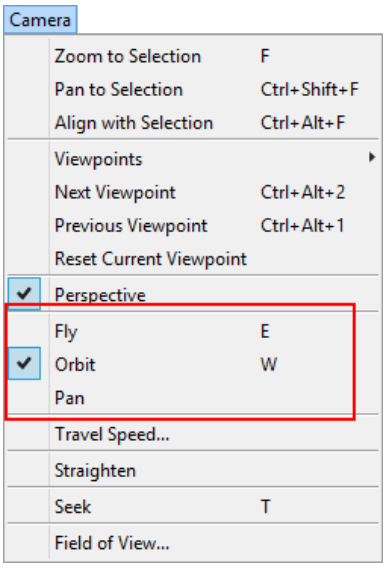
4.2.1 Navigation Modes

The three different navigation types are Orbit, Fly and Pan. You can switch between these types by accessing the Camera menu, and selecting the desired mode. The currently active mode is indicated both in the Camera menu and in the navigation controls in the lower toolbar. In the lower toolbar the navigation icon will change depending on which mode is active.



Orbit is the currently active navigation mode (second from the right)

The active navigation mode can be changed through shortcut keys, these are only available in the 3D view. Orbit is activated with 'W' and Fly with 'E'.



Navigation type can be changed through the Camera menu

4.2.2 Using the Orbit Navigation

The orbit navigation mode moves the camera in relation to a point in space, also referred to as the pivot point. This is the default navigation type used in the 3D tools in the HVRC CREATE suite.

Orbit mode can be activated by pressing the shortcut key 'W' in the 3D view or through the menu Camera > Orbit.



Orbit mode is active

If you have a three-button mouse, the buttons are mapped as follows:

- Left button: **rotate**

  Mouse cursor changes to orbit icon
- Right button: **pan**

  Mouse cursor changes to pan icon
- Middle button (or left & right button): **zoom**

  Mouse cursor changes to zoom icon

When **rotating** the camera with the left mouse button you change the position and orientation of the camera in relation to the pivot point. The pivot point will stay stationary and the camera will rotate (orbit) around the point by changing the horizontal and vertical rotation of the camera.

The direction the camera is moved when either rotating or panning is ***inverted***, meaning that when i.e. dragging left, the camera will rotate to the right and vice versa.

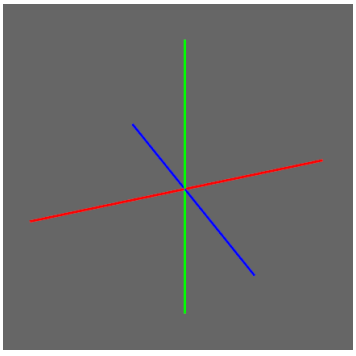
Panning will move the camera without changing its orientation. As the camera moves, the pivot point moves with the camera, maintaining the same distance and orientation from the camera.

Zooming will move the camera closer or further from the pivot point. The pivot point will stay stationary while zooming.

The distance that the camera is actually moved when either panning or zooming is relative to how far the camera is from the pivot point. The closer the camera is to the pivot point, the smaller is the distance that the camera is moved. The camera is prevented from moving past the pivot point, so the zooming distance will approach zero the closer the camera is to the point.

If the ctrl key is pressed while zooming, both the camera and the pivot point can be moved back and forth maintaining the same distance between the camera and the pivot point.

The pivot point can be shown in the 3D view temporarily while navigating. The point is visualised as three coloured lines that intersect at the point, where each lines corresponds to an axis (x, y, and z). To toggle the visibility of the pivot point select View > Show Camera Pivot Point (Orbit).

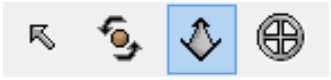


Pivot point visualisation, red, green, blue corresponds to x, y, z axis

4.2.3 Using the Fly Navigation

The fly navigation mode features free camera movement, enabling the camera to turn and tilt freely while moving. This gives full control over the movement.

Fly mode can be activated by pressing the shortcut key 'E' in the 3D view or through the menu Camera > Fly.



Fly mode is active

If you have a three-button mouse, the buttons are mapped as follows:

- Left button: **fly**

  Mouse cursor changes to fly icon
- Right button: **pan**

  Mouse cursor changes to pan icon
- Middle button: **tilt**

  Mouse cursor changes to tilt icon

Holding down the left button will **fly** the camera. This will move the camera forwards or backwards depending on the way you drag the mouse from the point you clicked. The camera will move in the direction the camera is currently facing. Moving the mouse to either side will also turn the camera towards that direction. Note that the turning is reversed when moving backwards.

Pressing the **tilt** button will tilt, or rotate, the camera in the direction you drag the mouse. This enables you to change the direction you are looking, and also the direction you will fly towards.

Panning will move the camera without changing its orientation. The camera will move in the direction the mouse is dragged.

The speed of the camera when using fly can be changed through Camera > Travel Speed…

4.2.4 Using the Pan Navigation

The pan navigation mode differs from the two other modes in that it does not allow you to change the orientation of the camera manually. This makes it a more specialized mode that you typically only want to use in some specific cases. Pan mode allows moving the camera location in any direction while maintaining the cameras current orientation, this effectively means that you can only pan and zoom.

A typical use case of the pan mode would be to align the camera with an axis, i.e. the y-axis, giving you a top-down view. Combining this with an orthographic view projection (see Changing Perspective Projection) will give a nice overview of the 3D scene. Typically when navigating like this you do not want to orient the camera, but rather want it to stay fixed. This navigation mode is tailored for this, preventing the user from making accidental changes to the camera orientation.

Although the mode itself does not offer any interactive way to change the cameras orientation, it is possible to use other tools to orient the camera. For example the Align Tool (see Aligning camera to selection) can be used to i.e. align the camera with a surface, such as a computer monitor.

Pan mode can be activated the menu Camera > Pan.



Pan mode is active

If you have a three-button mouse, the buttons are mapped as follows:

- Left button: **pan**



Mouse cursor changes to pan icon

- Right button: **pan**



Mouse cursor changes to pan icon

- Middle button (or left & right button): **zoom**



Mouse cursor changes to zoom icon

Panning will move the camera without changing its orientation. The camera will move in the direction the mouse is dragged. The direction the camera is moved when panning is ***inverted***, meaning that when i.e. dragging left, the camera will move to the right and vice versa.

Zoom will move the camera forwards or backwards without changing its orientation.

4.2.5 Using the Pick Mode

The Pick mode is used to select and interact with objects in the 3D scene.

Pick mode can be activated by pressing the shortcut key 'Q' in the 3D view or the Pick button in the toolbar.



Pick mode is active

The pick mode is automatically activated when using some of the tools or interactions in the application, such as creating a measurement (see Using the Measurement Tools).

4.2.6 Using the Rotate Mode

The Rotate mode is used to rotate objects in the 3D scene.

To rotate an object:

1. Activate the rotate mode by either pressing the Rotate button in the navigation toolbar, selecting Rotate in the Object menu or by pressing the shortcut key 'R'. Note that the picking button will also be marked as active when in Rotate mode, this is to indicate that selection of objects, which is a feature of the Pick mode is also active.
2. When selecting an object with the mouse, the selected object will be rotated when moving the mouse while holding down the left mouse button.



Rotate mode is active

4.2.7 Temporary switching between Interaction and Navigation Mode

It is possible to temporarily switch between the current active mode and the previously used mode, allowing you to perform some actions using the other mode, before then first mode is resumed. This is useful when you only need to quickly switch to another mode to do a quick action, such as when you are i.e. performing measurements in the scene, and you need to reposition the camera for a better viewing angle, before you continue the measurements.

Note that this switching is only allowed between the last used interaction mode (pick or rotation) and the last used navigation mode (orbit, fly, or pan).

The shortcut key 'shift' is used for this. For as long as the key is pressed, the previous mode will be active. When the key is released, the other mode will be reactivated.

4.2.8 Viewpoints

When viewing the 3D scene the camera is attached to a viewpoint. As the camera, and thus the viewpoint is moved around in the scene its position and orientation is modified. This is stored in the currently active viewpoint. By changing viewpoints you can quickly switch between different locations in the scene, and you are also able to store locations that you might wish to jump back to at a later time.

There are always seven predefined viewpoints available, these are referred to as **System Viewpoints**. These are automatically created when a new layout is created, and are positioned at various predefined locations commonly used when working with a layout. The positions adapt to the dimensions of the 3D scene.

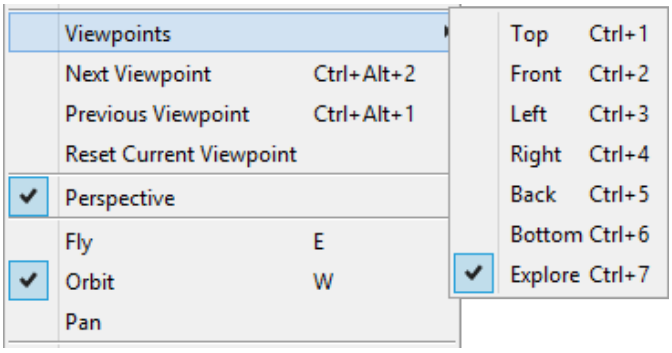
System Viewpoints:

- Top – view from above (looking down)
- Front – view from front
- Left – view from left side
- Right – view from right side
- Back – view from rear
- Bottom – view from below (looking up)
- Explore – view from front, tilted

It is also possible to create your own viewpoints, called **Custom Viewpoints**. There is no real difference between the system and the custom viewpoints, except that the system viewpoints are *locked*, meaning they cannot be renamed or deleted. Verification Tool does not support creating your own viewpoints, but it does have access to the viewpoints that were created in Layout Tool before the Layout was published.

Select viewpoint:

1. Select Camera > Viewpoints



2. Choose the viewpoint you want to select. The currently selected viewpoint is marked in the list.
   Note that the system viewpoints are always listed first. The shortcut keys command-[1-7] will select the associated viewpoint. There is no associated shortcut available for custom viewpoints.
3. When a viewpoint has been selected the camera will automatically be moved to the location and orientation specified by the newly selected viewpoint.

Reset current viewpoint:

It is possible to reset the viewpoint back to its original position and orientation.

1. Select Camera > Reset Current Viewpoint

For the system viewpoints this will set the viewpoints back to the correctly fitted location calculated based on the size of the 3D scene and which viewpoint it is (i.e. top is different from front). The custom viewpoints have no relation to the size of the 3D scene, and will thus be reset to the position and orientation they had initially, which will either be what they had when the layout was loaded.

Quickly switch to next viewpoint:

It is possible to quickly select the next viewpoint in the list of viewpoints. This is done by either selecting Camera > Next Viewpoint or using the shortcut key command-alt-2. This cycles through all the viewpoints, including custom viewpoints.

Quickly switch to previous viewpoint:

It is possible to quickly select the previous viewpoint in the list of viewpoints. This is done by either selecting Camera > Previous Viewpoint or using the shortcut key command-alt-1. This cycles through all the viewpoints, including custom viewpoints.

4.2.9 Using Straighten

The Straighten feature is used to level the user view relative to the ground when moving around in the Explore navigation mode. It resets any tilt movement that might have been made.

To straighten your view:

1. Press the Straighten menu entry in the Camera menu, or use the shortcut key 'spacebar' when in the 3D view.

4.2.10 Using the Seek Button

The Seek button is used to move the view closer to a point clicked on in the scene. After activating Seek, you can click on the scene for the view to move automatically towards that point. This can be useful for quickly moving around a 3D scene. The mouse cursor will change as long as Seek is active.



The Seek Button

To use Seek navigation to move the camera towards a point in the scene:

1. To active Seek either press the Seek Button in the navigation toolbar, or select Seek in the Camera menu, or press the shortcut key 'T' in the 3D view.
2. The mouse cursor will change to the same icon as the Seek button. This will remain active until step 3. is completed or Seek is cancelled by either pressing the button again, or pressing the 'escape' key.
3. Click on a surface in the 3D view
4. The view will move rapidly towards the point clicked, stopping immediately in front of the point

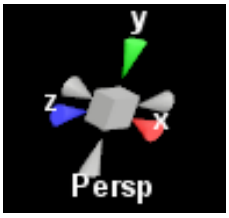
4.2.11 Using the Virtual Compass

The virtual compass indicates the cameras position and orientation in the virtual layout in relation to the direction of the X, Y, and Z axis. This can be useful to help you maintain your bearings while moving around.

If the camera is placed on the floor and the camera is looking straight ahead, then the x-axis is towards the right, y-axis is upwards, and z-axis is towards you.

To use the compass:

1. Select View > Show Compass
2. A virtual compass will appear in the upper right corner of the 3D view:



3. Press the menu entry again to turn the 3D compass off

The virtual compass is interactive. If you place your mouse above any of the elements that compose the compass you will see that they change colour indicating that the current element is interactive. Clicking on any of the cones will transition the camera to the position and orientation represented by the compass. The box can be pressed to switch between the different projection modes, Perspective and Orthographic (see Changing Perspective Projection).

4.2.12 Setting the Background Colour

The background colour of the 3D view can be configured to a colour that provides an appropriate background to the layout in use.

To toggle between a plain white background and a user-defined background for the 3D view:

1. Select View > Show Background

To change the background colour of the 3D view:

1. Select View > Set Background Colour…
2. A colour chooser dialog will appear
3. Select a colour and press OK or Cancel to abort

4.2.13 Using the Visual Grid

A user-configurable visual grid is available that can be useful as an aid to judging distances.

To toggle the visual grid:

1. Select View > Show Grid or press the shortcut key 'G' in the 3D View

To configure the visual grid:

1. Select View > Grid Options…
2. A dialog will appear in which you can adjust the grid spacing and colour

Press OK to accept the changes or cancel to dismiss the dialog

4.2.14 Changing Perspective Projection

The default 3D projection in the 3D view is **perspective projection**. This is similar to what the human eye perceives when viewing the real world, where objects in the distance appear smaller than objects close by. Alternatively perspective projection can be turned off, in which case **orthographic projection** will be used instead. Orthographic projection will ignore the distance between the eye and the objects, effectively rendering all objects at the same scale.

To toggle perspective project:

1. Select Camera > Perspective

This will turn perspective projection on or off

4.2.15 Changing the Field of View

The field of view defines how much of the 3D scene is observable from the 3D view. Increasing the field of view will let you see more of the 3D scene, but objects may appear smaller. If the field of view value is set too high the image can look distorted. Generally values between 60 and 90 are recommended, depending on how large the monitor is, and how far away from the monitor the user is seated.

To change the field of view:

1. Select Camera > Field of View…
2. A dialog will appear in which you can set the field of view

Press OK to apply the new value or Cancel to abort

4.2.16 Aligning camera to selection

The Align to Selection function positions the camera so that it is placed perpendicular to the selection. This is especially useful when used in combination with the zoom to selection function if you want to fit and align a 2D surface, such as a control panel, to your view.

To align the camera perpendicular to the current selection:

1. Select Camera > Align to Selection, or use the shortcut keys command-alt-F

4.2.17 Centring camera on selection

The current camera view of the 3D layout can be centred on the current selection. This is very useful for aligning the view with objects selected by name, in the Object Overview, or directly in the 3D view.

If no objects are selected then the camera will centre on the room.

To reposition the camera at the centre of the current selection:

1. Select Camera > Pan to Selection, or use the shortcut keys command-shift-F

4.2.18 Zooming camera to selection

The Zoom to Selection function adjusts the view to fit the current selection into it.

If nothing is selected then the room itself will be fitted into the view.

To zoom the camera to fit the current selection into the current view:

1. Select Camera > Zoom to Selection, or use the shortcut keys command-F or simply press 'F' in the 3D view

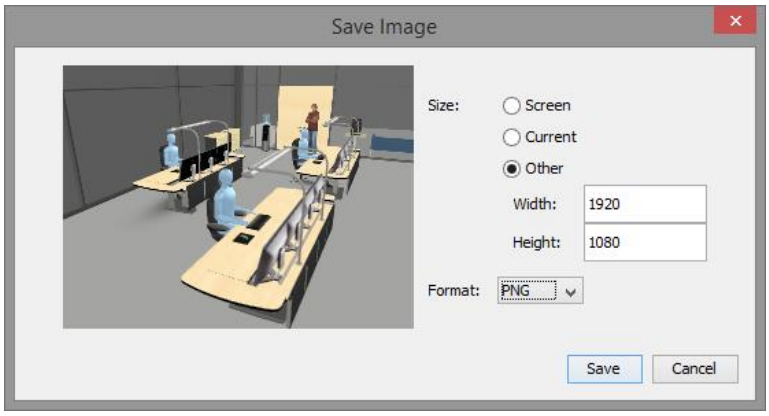
4.3 Snapshot and Room Configuration

4.3.1 Creating a snapshot of the virtual layout

Screenshots can be created by selecting File > Export 2D Graphic from the File menu.

To create a snapshot:

1. Select File > Export 2D Graphic from the File menu.
2. This will prompt you with the following dialog.



The Snapshot button in the centre

3. Select the appropriate options for the image to save.

   Screen: This will export the image using the resolution of the current screen.

   Current: This will export the image using the current size of the 3D view on the screen at the moment the dialog was opened.

   Other: This lets you export the image using a custom resolution.

   Format can be set to either JPEG or PNG.

4. Press Save or Cancel to abort. Upon pressing save you will be prompted to choose a filename and a location to save the image.

4.3.2 Controlling visibility of parts of the virtual room

While working with a layout you may find that parts of the room obscure your view and that it would be convenient to temporarily hide them. For example, it is very often useful to temporarily hide the ceiling of a room in order to get a good overview of the layout and work with it from above.

Toggling the visibility of parts of the room is done using the Room Configuration window. Note that this is purely a visual aid for controlling visibility so no changes are actually made to the room model itself that would affect other users or modify the design.

What you can toggle depends on how the room model itself has been created. In some cases, you may not be able to toggle anything, whereas in others there may be many parts that can be toggled. In any case, this functionality only toggles parts of the room model and not the contents, which remain in place.

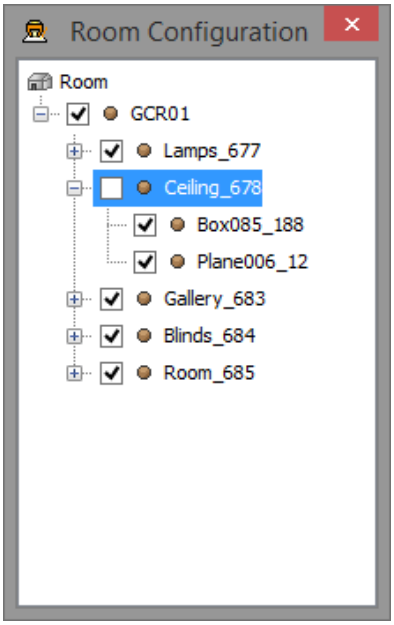
To hide/show parts of the room:

1. Press the Room Configuration button



The Room Configuration Button to the far right on the Navigation Toolbar

2. The Room Configuration window will appear:



Room Configuration window

3. Toggle the visibility of parts of the room by selecting or deselecting the checkbox next to the named room part. In most cases rooms are organised hierarchically, in which case a handle is shown to the left of the check box. Clicking on the handle reveals/hides the next level of the room hierarchy.

4.4 Annotations

The designer can add annotations for specific objects in the scene or for the virtual layout. This enables the layout designer to associate information to specific virtual objects in the scene or the layout in general. These annotations are also available for the reviewer using Verification Tool, so they can be used to communicate information to the reviewer. As these are the designer's notes, intended to provide information about the design to you, you are not permitted to modify them.

4.4.1 Annotation User Interface Overview

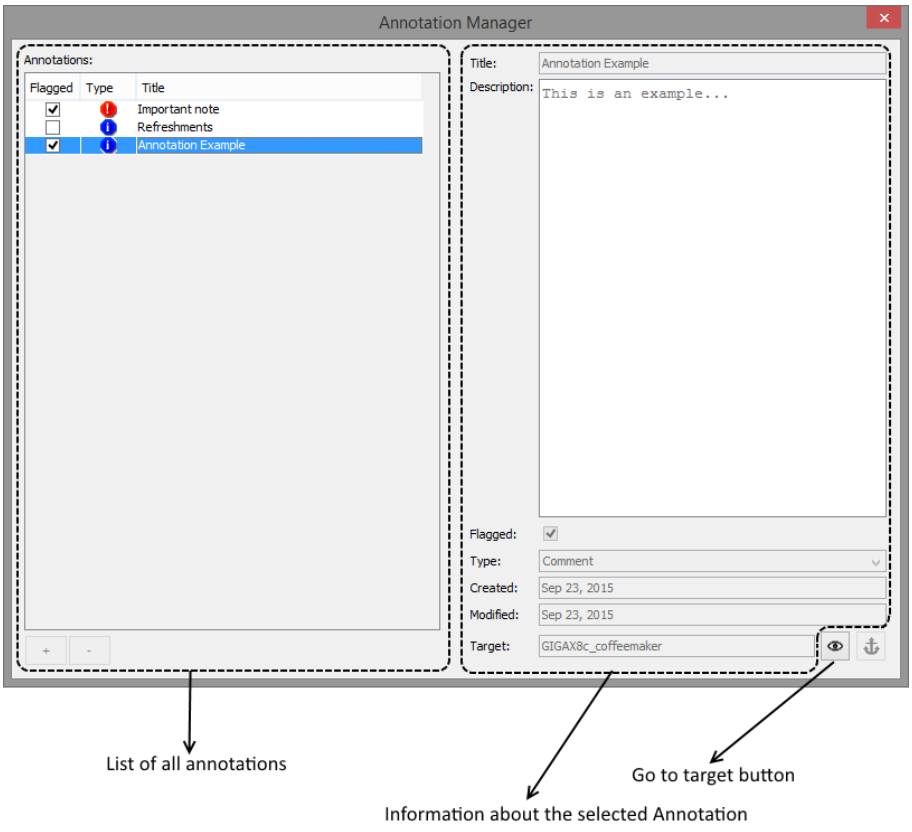
Selecting Window > Annotation Manager opens the Annotation Manager window.

This window consists of two parts:

1. The panel to the left holds a list of all current annotations for the current layout.
2. The panel to the right holds all the information about the specific annotation.

At the bottom right there is a button that navigates the view to the current selected target. This can be used to transition the camera to a specific place or object in the virtual layout that is relevant to the annotation.

Note that annotations are read only in Verification Tool, meaning that they cannot be edited.



4.4.2 Navigating to an annotation target

When working with annotations, it is possible for the designer to navigate the view to a specific annotation target. Selecting the go to annotation target button can do this.

To move the view to a specific annotation:

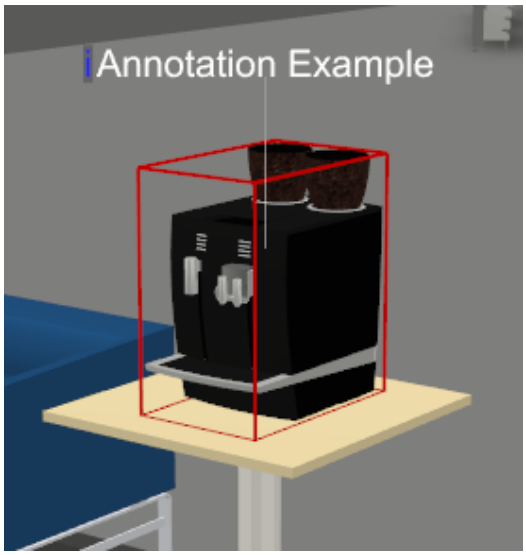
1. Open the annotation window by selecting Window > Annotation Manager
2. Press the Go to Target button at the bottom right in the edit panel:



3. The view is moved to the annotation target

4.4.3 Show Annotations

It is possible to visualise all the currently added annotations in the scene. When showing annotations the title of the annotations is visualised as 3D text in the scene. If the visualised annotation has an associated target, there is a connecting line between the text and the target.



Visualisation of an annotation

To show/hide annotations:

1. Select View > Show Annotations

4.5 Using the Manikin Tools

The Manikin Tools enable you position virtual humans in the layout to test lines of sight, reach, access, and so forth. There is normally a variety of manikins available from the server that can be used to test the layout, including standing and sitting manikins of various heights.



The Manikin Tool toolset

The Manikin Tools toolset consists of Add Manikin and Remove Manikin buttons to the left, the Manikin Selector controls in the middle and the Manikin Control Buttons to the right.

The Manikin Control Buttons provide access to Go To, Reach, Reach Distance, View, View Cone, and View Cone Options functions.

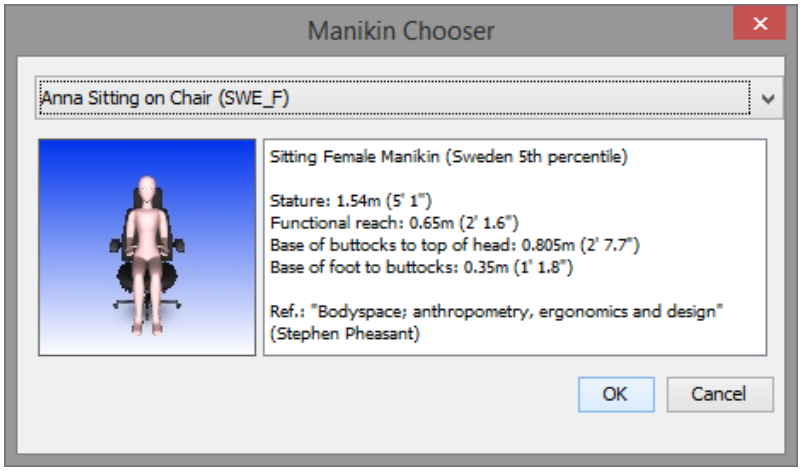
4.5.1 Inserting a manikin into a Virtual Layout

The first step when working with a manikin is to add it to the virtual layout. Manikins can be added to a layout by pressing the Add Manikin Button, located to the far left of the Manikins Tool toolset.

Once a manikin has been added to the layout, the Manikin Selector and the Manikin Control Buttons (Reach, View and View Cone Buttons) are activated in the Manikin Tool toolset.

To add a manikin to the virtual layout:

1. Press the Add Manikin button in the Manikin toolbar
2. The Manikin Chooser window appears:



The Manikin Chooser window

3. Select the manikin you want to use from the drop-down menu. A thumbnail image of the selected manikin is shown below the menu as well as some information about the manikin.
4. Press OK to add the manikin to the virtual layout, or Cancel to abort the operation
5. The Manikin Chooser window will close.
6. With the left mouse button, click the location in the layout where you want the manikin to be positioned
7. Repeat this procedure to add more manikins to the layout

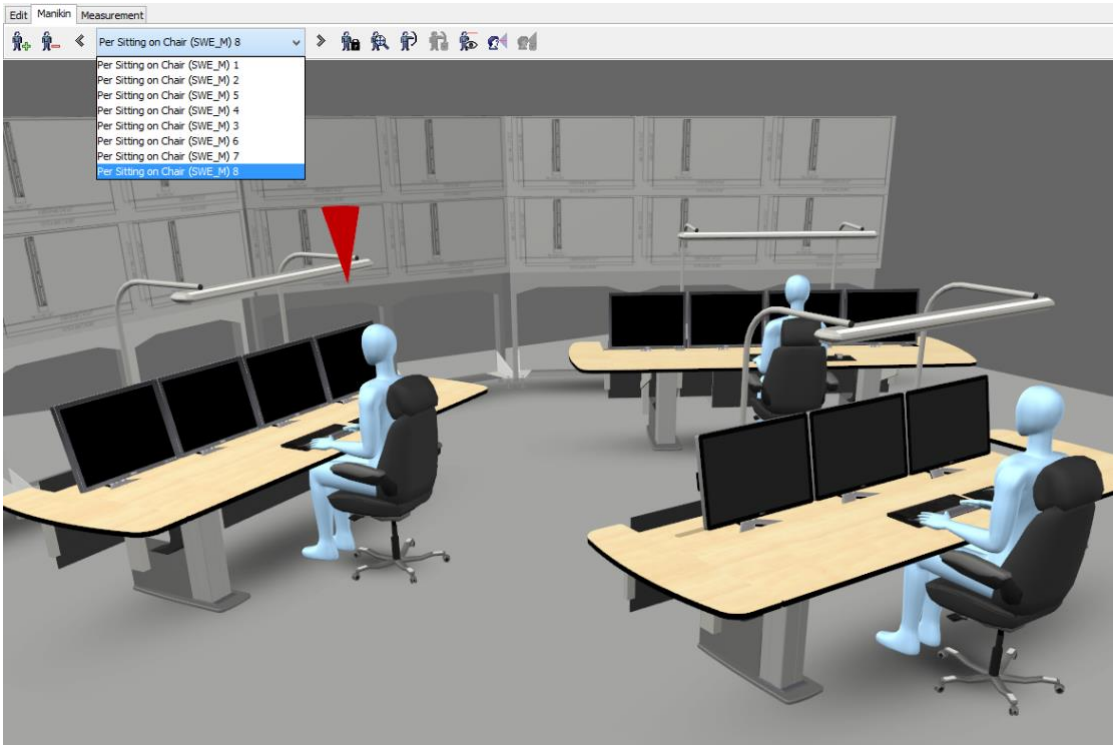
4.5.2 Selecting a manikin in a layout

If the virtual layout contains more the one manikin, you can select the manikin that you want to use using the Manikin Selector in the Manikin Tools toolset. The Manikin Selector consists of a drop-down menu that lists all manikins in the layout and previous and next buttons that can be used to cycle between manikins.

The current manikin is always indicated by a red cone that points down at its head.

To select a manikin using the Manikin Selector drop-down menu:

1. Click on the Manikin Selector drop-down menu with the left mouse button
2. Select the manikin that you want to select from the manikins listed in the menu by clicking on it with the left mouse button
3. The selected manikin will have a red cone over its head to indicate that it is selected:



A selected manikin (one of several manikins in the layout) with the Manikin Selector menu shown

To select a manikin using the Manikin Selector cycle buttons:

1. Press the Previous or Next buttons on either side of the drop-down menu in the Manikin Selector to select the previous or next manikin in the list
2. The Manikin Selector menu is updated to show the name of the selected manikin and the selected manikin is highlighted

4.5.3 Positioning a manikin

Manikins can be freely positioned in the virtual layout. You can change both the location and direction of a manikin.

Manikins are always located in an upright position.

To position the current manikin:

1. Use the left mouse button to click on the location that you want to move the manikin to. For standing manikins, this is the location of the bottom of their feet, whereas for sitting manikins it is normally the point you want the manikin to sit on. This can vary depending on how the manikin has been designed.
2. To change the direction that the manikin's body faces in, switch to rotation mode and rotate by dragging the mouse (see Using the Rotate Mode).

4.5.4 Visualising a manikin's field of view and line of sight

The View Cone function enables you to display a view cone for a manikin, indicating the field of view and line of sight. A transparent white cone depicts the field of view and a green line indicates the direct

line of sight. If the line of sight is broken by an object or surface then it turns red from the point at which the line of sight is broken.

A View Cone Properties window can be accessed that enables you to fine-tune the view cone to suit your requirements.

Each manikin you add to a layout has an independent set of view cone properties, so adjustments that you make to a manikin's view cone affect that manikin only.



The Manikin Control Buttons — View Cone Button selected

To see a manikin's view cone:

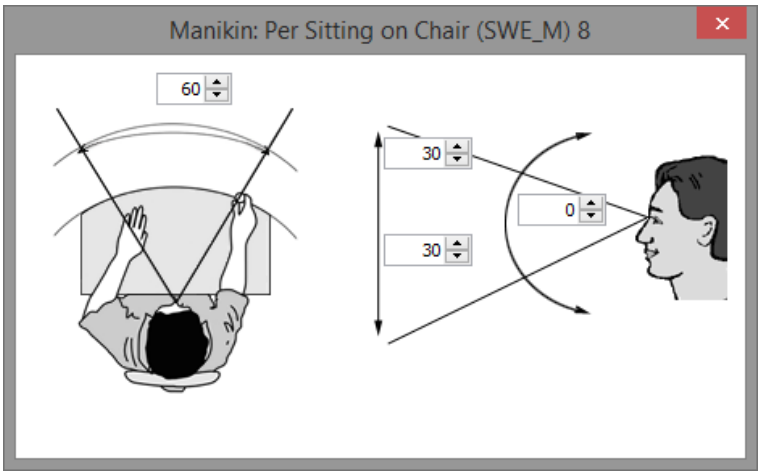
1. Select a manikin
2. Press the View Cone Button in the Manikin Tools toolset to turn on the view cone visualisation
3. Press the View Cone Button again to turn off the view cone visualisation



A manikin with view cone visualisation turned on

To modify the view cone settings:

1. Select a manikin and turn on its view cone
2. Press the View Cone Options button next to the View Cone Button in the Manikin Tools toolset
3. The View Cone Properties dialog window will appear:



The View Cone Properties dialog window

4. Adjust the values as indicated in the diagrams by either directly entering a value or using the increment/decrement buttons. The buttons adjust the value by 5-degree intervals
5. Press Dismiss/OK to close the dialog window

4.5.5 Viewing a manikin's reach envelope

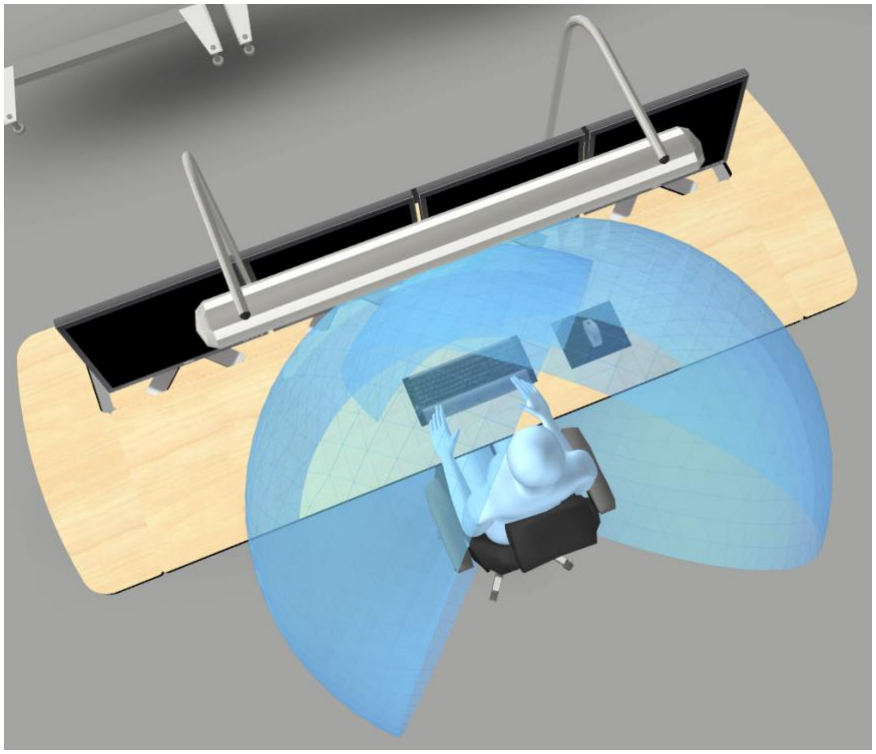
The reach envelope visualisation function enables you to see the reach envelope for a manikin. It indicates the maximum distance a manikin can reach.



The Manikin Control Buttons – Reach Button selected

To see a manikin's reach envelope:

1. Select a manikin
2. Press the Reach Button in the Manikin Tools toolset to turn on the reach envelope visualisation
3. The button to the right of the Reach button is the Reach Distance button, which toggles a visualisation that depicts the actual distance of the manikins reach in units. This is only enabled when the reach envelope has been toggled on.
4. Press the Reach Button again to turn off the reach envelope visualisation



The selected manikin with reach envelope visualisation turned on

4.5.6 Seeing through a manikin's eyes

It is often useful to be able to see the virtual layout through the eyes of the manikin. By selecting the manikin view function from the Manikin Control buttons, you can switch your view location so it follows the direction line of sight (as configured using the view cone properties – See Visualising a manikin's field of view and line of sight) from the location of the manikin's eyes.



The Manikin Control Buttons – View Button selected

To see the layout through a manikin's eyes:

1. Select a manikin
2. Press the View Button in the Manikin Tools toolset to switch view location
3. To turn the manikin while looking through its eyes, click and hold either the left or right mouse button down, while moving the mouse cursor in the direction the manikin should turn. The further you drag the mouse to either side from the point you originally clicked in the 3D view, the faster the manikin will turn. Release the mouse button, or move the mouse cursor to the point you first clicked to stop the manikin from rotating.
4. Press the View Button again to revert to your previous view location

4.5.7 Removing a manikin from a Virtual Layout

When a manikin is no longer needed, it can be removed from the layout by selecting it and pressing the Remove Manikin Button, located to the far left of the Manikins Tool toolset, next to the Add Manikin Button.

Removing manikin from virtual layout:

1. Select the manikin to be removed
2. Press the Remove Manikin Button in the Manikin Tools

4.6 Using the Measurement Tools

The Measurement Tools enable you to verify the virtual layout against standards and guidelines where measurements of various kinds need to be taken.

The Measurement Tools toolset includes a Distance, Perpendicular Distance, Angle, Label Size, View Angle and Volume tools.

Only one measurement tool can be active at any time, but multiple measurements can be displayed simultaneously for each tool.

Selecting a tool enables it and will also switch the navigation mode to picking. Deselecting a tool turns it off and disables interaction with any existing measurements of that tool type.

When a tool is selected, "+" and "–" buttons can be used to add and remove measurements. A drop-down menu with previous and next buttons enables you to select a measurement to adjust it if you are working with more than one measurement. If a measurement has been completed (e.g. a distance has been measured) then the active measurement is highlighted to help you identify which measurement is active when more than one measurement has been created.

When you add a measurement, picking is enabled and you can perform the measurement by clicking in the model. See the sections about the individual measurement tools for exact details on the mouse interaction possibilities available for each tool.

When working with measurements you will typically be in picking mode. If you need to move to a new position before continuing or adapting measurements, a quick way to switch between navigation modes can be to use the shortcut key 'shift'. This enables you to temporarily toggle between movement and picking.

Note that all measurements are in relation to surfaces in the model, including manikins added to it. You cannot measure the distance between, say, the ground and an arbitrary location in the air.

The button to the far left in the measurement toolbar will remove all measurements of all types placed by the user. Note that this is not undoable.



The Measurement Tool toolset with Distance, Perpendicular Distance, Angle, Label Size, View Angle, and Volume tool buttons. The button to the far left removes all measurements that have been created.

4.6.1 Measuring Distances

The Distance Tool and the Perpendicular Distance Tool in the Measurement Tool toolset are used to measure the distance between two surfaces. The Distance Tool displays the distance between two arbitrary points, while the Perpendicular Distance Tool displays the perpendicular distance from a point on a surface to the first surface hit. The Perpendicular Distance Tool is useful for measuring the distance between the floor and the bottom of a desktop or between two facing walls, for example.



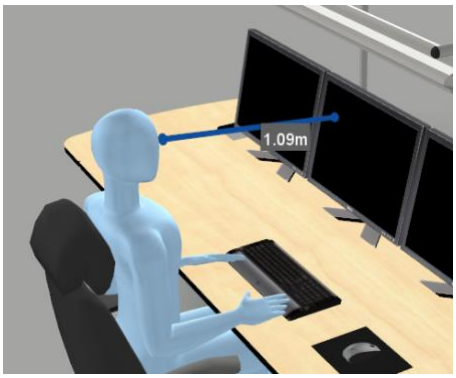
The Measurement Tool toolset with Distance Tool enabled



The Measurement Tool toolset with Perpendicular Distance Tool enabled

To measure arbitrary distances between surfaces:

1. Activate the Distance Tool in the Measurement Toolset by pressing the Distance Tool button
2. Use the left mouse button to click in the virtual layout on the point from which you wish to measure
3. Use the left mouse button to click again in the virtual layout at the point to which you want to measure from the previously clicked point
4. A measurement in the form of an elastic ruler will appear showing the distance in metres between the two points:



The Distance Tool ruler with distance shown

5. To adjust the ruler, pick and drag at a new location with the left mouse button. The closest measurement point will then move to the new point updating the ruler. The end of the ruler will follow the surface that the mouse is pointing at as you drag.
6. To move the ruler to a new location, repeat from step 2 (temporarily deselect the pick button, or hold down the 'shift' key, to navigate, if necessary)
7. To add a new measurement, press the plus button in the measurement toolbar and proceed from point 2 as before to work with the new measurement.
8. You can add as many measurements as you like. Use the drop-down menu to select the measurement you want to work with or use the previous and next buttons to cycle through measurements. The currently active measurement will be highlighted.
9. To remove a measurement, press the minus button while the measurement is active.

To measure perpendicular distance from a point on a surface to the first surface hit:

1. Activate the Perpendicular Distance Tool in the Measurement Toolset by pressing the Perpendicular Distance Tool button
2. Use the left mouse button to click in the virtual layout on the point from which you wish to measure
10. The perpendicular distance from the point clicked to the first surface hit is shown, similar to a distance measurement created using the Distance Tool. If nothing appears then there may be no surfaces between the point and the out boundary of the layout, so click elsewhere to try again. The distance in meters is shown:



The Perpendicular Distance Tool ruler with distance shown

3. To add a new measurement, press the plus button in the measurement toolbar and proceed from point 2 as before to work with the new measurement.
4. You can add as many measurements as you like. Use the drop-down menu to select the measurement you want to work with or use the previous and next buttons to cycle through measurements. The currently active measurement will be highlighted.
5. To remove a measurement, press the minus button while the measurement is active.

4.6.2 Measuring angles

The Angle Tool is used to measure angles between locations and is similar to the Distance Tool to operate except that there are three points rather than two to take into account.

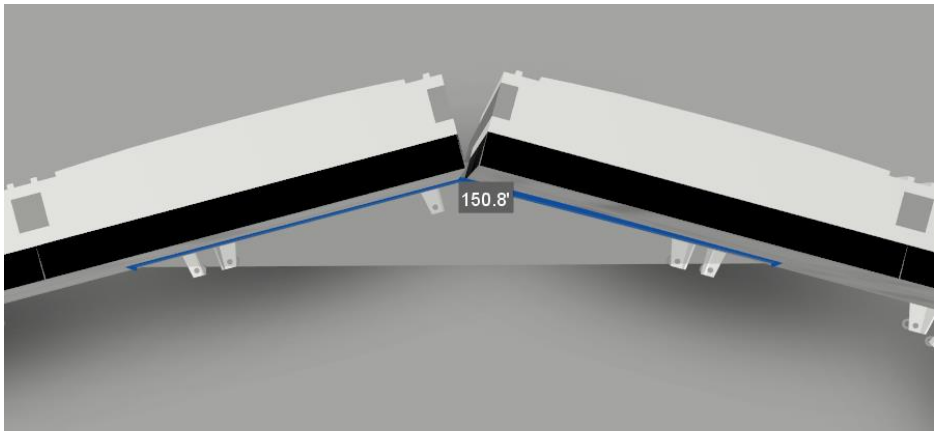
Once three locations have been selected, a visualisation of the angle between the points, and a label indicating the size of the angle, is displayed. The points can then be adjusted at will.



The Measurement Tool toolset with Angle Tool enabled

To measure the angle between three points:

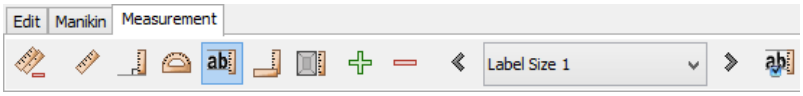
1. Activate the Angle Tool in the Measurement Toolset by pressing the Angle Tool button
2. Use the left mouse button to click on three locations in the model. The first location should be the first end point, the second is the point at which the angle should be measured, and third location is the final end point.
3. A visual representation of the angle between the first and last points at the second point will appear with the size of the angle shown in a label.
4. To move one of the points in the measurement pick a new point in the virtual layout with the left mouse button. The closest measurement point will then move to the new point.
5. Repeat from step 2 to measure a different angle (temporarily deselect the pick button, or hold down the 'shift' key, to navigate, if necessary)
6. To add a new measurement, press the plus button in the measurement toolbar and proceed from point 2 as before to work with the new ruler.
7. You can add as many measurements as you like. Use the drop-down menu to select the measurement you want to work with or use the previous and next buttons to cycle through measurements. The currently active measurement will be highlighted.
8. To remove a measurement, press the minus button while the measurement is active.



An angle measured using the Angle Tool.

4.6.3 Visualising legible distance and area for text labels

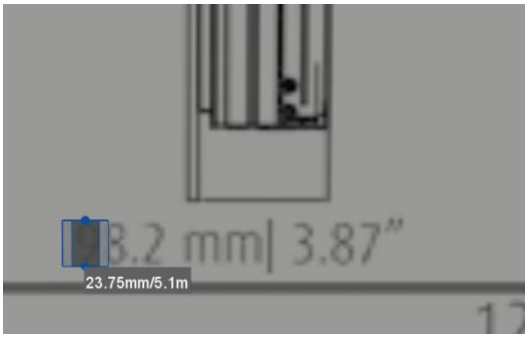
The Label Size Tool enables you to measure the distance within which text labels in a room are legible. This measurement tools indicates the height of the text, which you measure, and the distance from the measurement point within which the text is legible. This distance is visualised as a sphere that encloses the legibility area. While this sphere can help you to test whether text is large enough to be read at a certain distance, it does not indicate visibility. You can check visibility by navigating in the model, using the manikin tools, and/or using the View Angle Tool.



The Measurement Tool toolset with Label Size Tool enabled

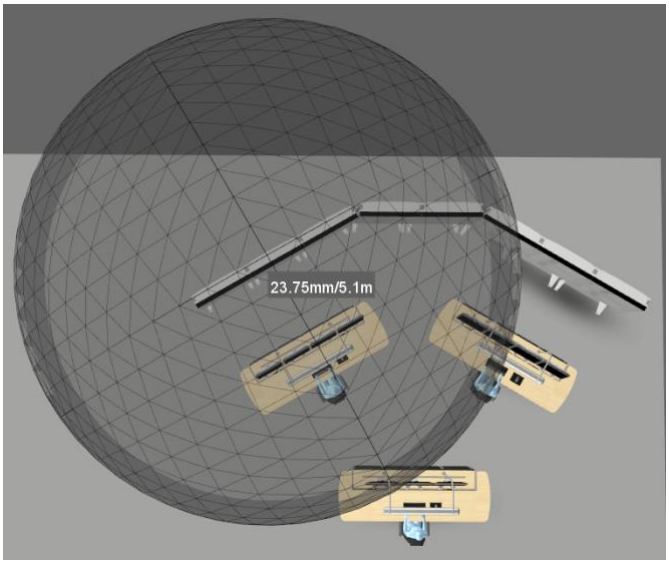
To visualise the maximum distance within text of a measured height is legible:

1. Activate the Label Size Tool in the Measurement Toolset by pressing the Label Size Tool button
2. Click on the lowest point of the character of text in a label with the left mouse
3. Click on the highest point of the character of text in the label with the left mouse button



The Label Size Tool in action – the user has clicked at the bottom and top of the first digit in the label

4. A rectangular area will appear highlighting the space between the two points, and a sphere appears indicating the area within which text of the height measured is normally legible. You may need to move away from the location where you made the measurement in order to see the sphere:



A Label Size Tool measurement showing the area (a 5.1m radius from the text) within which a label with text of height 23.75mm can be read. Note that the sphere indicates distance and not the visibility

5. The character height is displayed together with the maximum reading distance for this character.
6. To adjust the height, click and drag with the left button near the end of the label you wish to adjust
7. To move the measurement entirely, pick two new points using the left mouse button
8. To add a new measurement, press the plus button in the measurement toolbar and proceed from point 2 as before to work with the new measurement.
9. You can add as many measurements as you like. Use the drop-down menu to select the measurement you want to work with or use the previous and next buttons to cycle through measurements. The currently active measurement will be highlighted.
10. To remove a measurement, press the minus button while the measurement is active.

4.6.4 Visualising the area within which a location can be seen

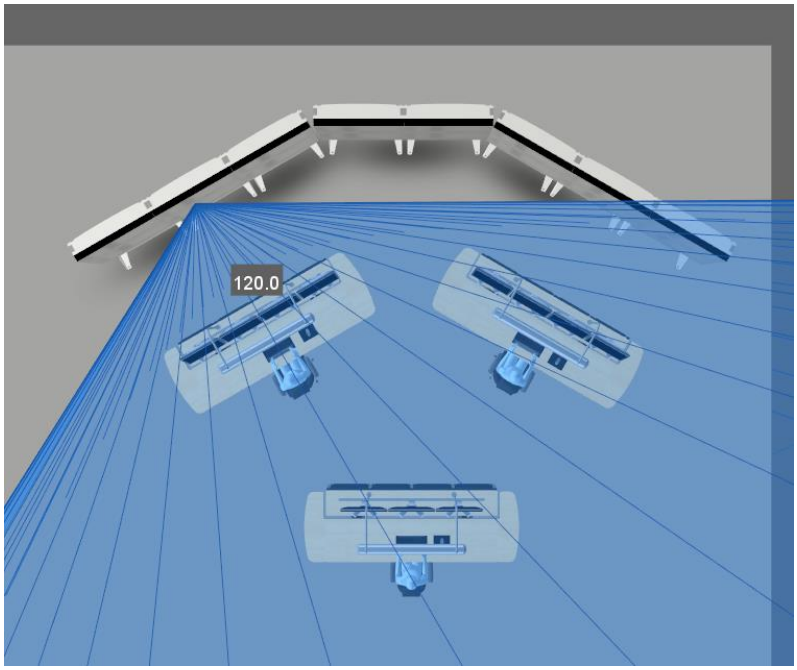
The View Angle Tool enables you to determine whether a location in a layout can be seen, providing a visual representation of the viewing angle for the location you select. This is particularly relevant for checking the extent of the area in which it is possible to see a sign (text label) or indicator and is typically used in combination with the manikin tools and/or in addition to the Label Size Tool.



The Measurement Tool toolset with View Angle Tool enabled

To visualise the viewing area for a location:

1. Activate the View Angle Tool in the Measurement Toolset by pressing the View Angle Tool button
2. Use the left mouse button to click in the virtual layout at the point from which you wish to measure
3. A visualisation cone appears for the selected point. You may need to navigate to a new position in order to get a better view of the extent of the visualisation (temporarily deselect the pick button, or hold down the 'shift' key, to navigate, if necessary):



A View Angle Tool measurement seen from above

4. To move the measurement point, pick a new point in the virtual layout with the left mouse button.
5. To add a new measurement, press the plus button in the measurement toolbar and proceed from point 2 as before to work with the new measurement.
6. You can add as many measurements as you like. Use the drop-down menu to select the measurement you want to work with or use the previous and next buttons to cycle through measurements. The currently active measurement will be highlighted.
7. You can configure the viewing angle by clicking on the Viewing Angle Options button that appears next to the tools selector when this tool is active.
8. To remove a measurement, press the minus button while the measurement is active.

4.6.5 Measuring rectangular volumes

The Rectangular Volume Tool enables you to measure volumes and distances.

Once three locations have been selected, a visualisation of the angle between the points, and a label indicating the size of the angle, is displayed. The points can then be adjusted at will.

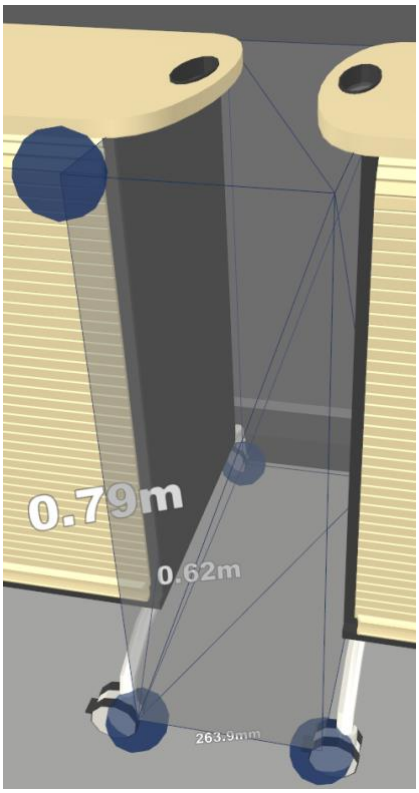


The Measurement Tool toolset with Rectangular Volume Tool enabled

To measure the rectangular volume:

1. Activate the Rectangular Volume Tool in the Measurement Toolset by pressing the Volume Tool button
2. Use the left mouse button to click on two locations in the model. These two points represents the lower and upper points in the volume, excluding height. Alternatively the mouse can be pressed and dragged, showing a visual rectangle as you drag the mouse, where the first point pressed, and the point when the mouse is released represents the lower and upper points of the volume. The height is always initialized default to 1 meter.
3. A visual representation of the rectangular volume will be shown. The visualisation consists of a rectangular box representing the volume, with the distances for each axis' depicted.
4. There are three spheres in the lower corners that can be dragged to resize either the width or the depth of the volume.

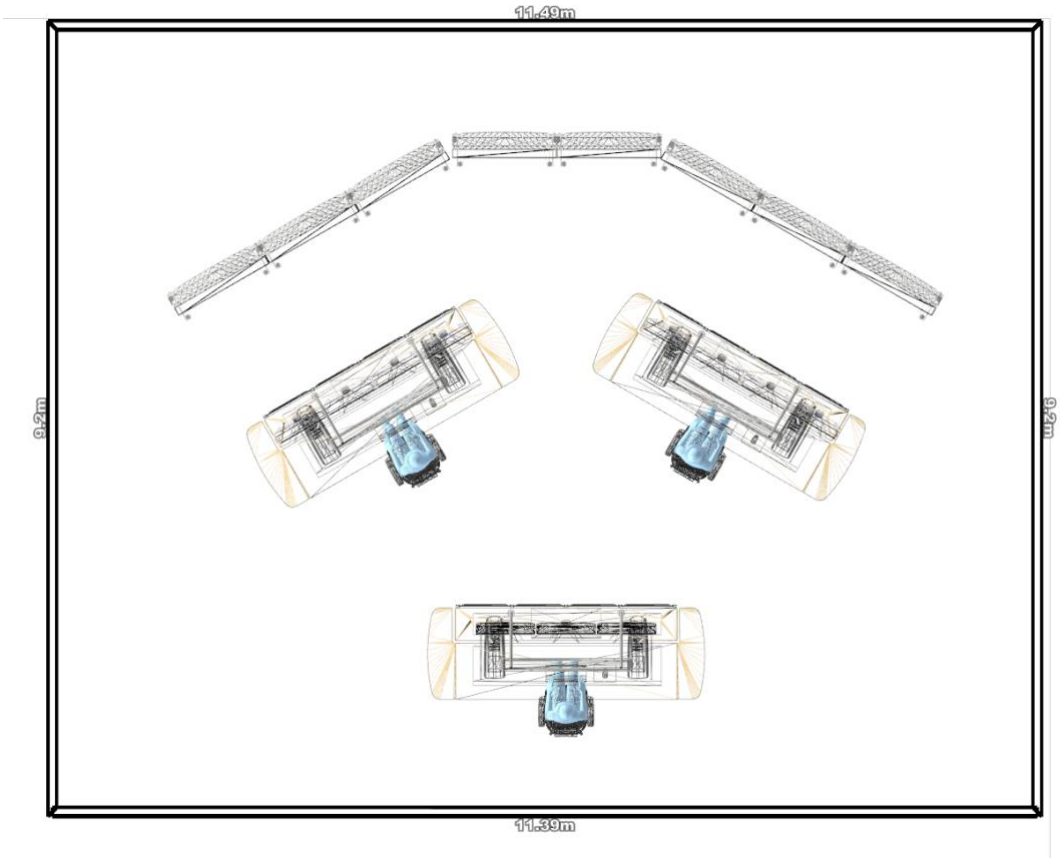
5. There is one sphere on the top of the volume that can be dragged to increase or decrease the height of the volume.
6. To move the volume around in the Layout press anywhere on the volume visualisation (except the sphere) and simply drag the volume around.
7. To rotate the volume switch to rotate mode (see Using the Rotate Mode), and drag anywhere on the volume to rotate.
8. To add a new measurement, press the plus button in the measurement toolbar and proceed from point 2 as before to work with the new volume.
9. You can add as many measurements as you like. Use the drop-down menu to select the measurement you want to work with or use the previous and next buttons to cycle through measurements. The currently active measurement will be highlighted.
10. To remove a measurement, press the minus button while the measurement is active.



A volume measured using the Rectangular Volume Tool.

4.7 Plan View

A plan view of the Layout can be created using different styles. The types can be customized by changing both the projection and the position and orientation of the view, as well as other properties that dictate how the 3D objects in the layout are drawn.



Plan view of a room in a layout

To display a plan view of a layout:

1. Position the camera at a viewpoint with an overview of the whole 3D scene, or the parts you wish a view of. There are two ways to do this:
    a. Select one of the system viewpoints, i.e. Top (see Viewpoints) and select Camera > Reset Current Viewpoint. Optionally adjust position by zooming in/out if necessary.
    b. Manually position the camera at the location

    Pan mode navigation is very suited for navigating when taking a plan view, because it prevents you from accidently changing the orientation of the camera (see Using the Pan Navigation).
2. Optional: Turn off perspective projection by deselecting Camera > Perspective (see Using the Pan Navigation)
3. Optional: Turn on the distance grid by selecting View > Show Grid (see Using the Visual Grid)
4. To save the plan view see Creating a snapshot of the virtual layout

When you are finished just reverse the features optional steps you performed

5 Review Reports

All the data collected in the review process can be viewed in a report. This report can be used as a design document for the designer, in an iterative process or as a verification document to the proper authorities.

5.1 Generating reports

Reports can be created that contain guideline and review text with associated snapshots

Reports are generated depending on the status of the guidelines in the review context. When you request a report, a Report Specification window is shown in which you can select between a set of different styles for the report.

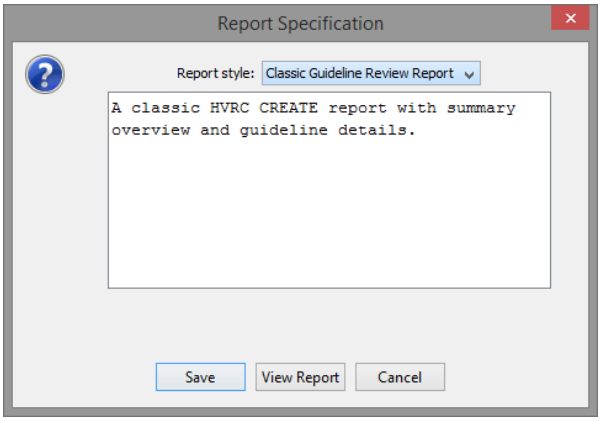
If you are not using Microsoft Windows or Apple macOS then the View Report option in the Report Specification window is replaced with a Save Report option. You can save the report as HTML to your local disk and then view it using a Web browser.

You can print your report via your Web browser.

Project managers have additional options. See Project Manager Privileges for details.

To view or save a report:

1. Select File > Export Report…
2. The Report specification window appears:



The Report Specification window used to generate a report

3. The Report Style contains a dropdown with a list of different styles that change what the report contains, and how the data is presented. The text displayed below describes the currently selected style.
4. Press View Report (Microsoft Windows and Apple macOS only) or Save.
5. Press View Report (Microsoft Windows Only) or Save.
6. If you select View Report then the report will be displayed in your default web browser.

   If you select Save then a file dialog will appear requesting that you enter a name for the report. Enter a name and press save to store a copy of the report on your local disk.

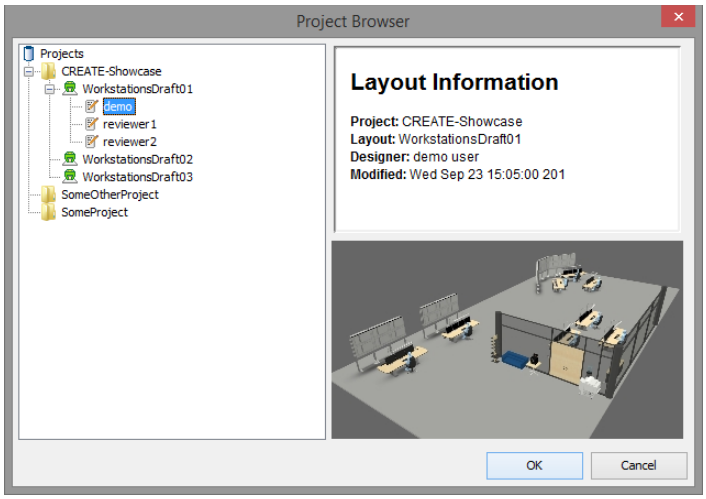
6 Project Manager Privileges

The project manager for a project can view the review contexts of any reviewer, however making changes is not permitted if the context was created by a user other than the manager. See Opening an existing review context for additional details about accessing review contexts.

By opening the review context of any reviewer the project manager can choose to generate a report based on that review context. See Generating reports or additional details about report generation.

Project managers are not permitted to make changes to reviews made by other reviewers.

To open any available review context while project manager:



Project Browser with layout WorkstationsDraft01 shown, with three review contexts

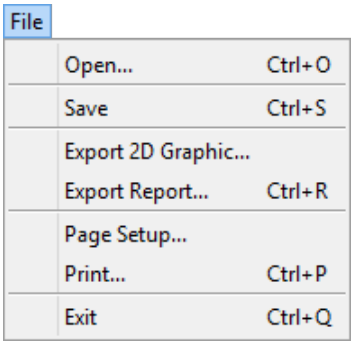
1. Select File > Open… to access the Project Browser.
2. Locate the project and layout you wish to examine.
3. Select a review context for the layout (selecting the layout itself will open your own context, if you are a reviewer also).
4. Press OK, or Cancel.

To view or save a report while project manager:

See Generating reports.

7 Menus

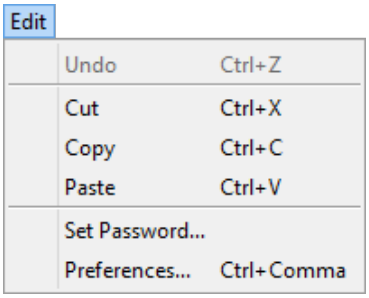
7.1 File Menu



The File menu provides functionality for managing and printing guideline sets. All of the available items in the File menu have keyboard shortcuts (shown to the right of the menu items above).

Open…	is used to opens a review context (see Opening an Existing Review Context).
Save	is used to save the current review context (see Saving a review context)
Export 2D Graphic...	Exports a screen shot of the 3D view from the current viewpoint (see Creating a snapshot of the virtual layout)
Export Report…	is used to view reports generated by the verification tool (See Generating reports).
Page Setup…	is used to set the page orientation and paper size (See Printing the current guideline data).
Print…	is used to print the currently displayed guideline (or index) and procedure (See Printing the current guideline data).
Exit	is used to quit the Verification Tool. If you choose this menu item then you will be requested to confirm that you want to quit.

7.2 Edit Menu

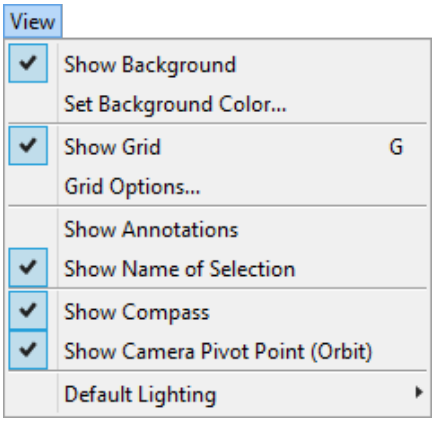


The Edit menu provides functionality for editing text as well as access to functionality for changing your password and preferences. Most of the available items in the Edit menu have keyboard shortcuts (shown to the right of the menu items above).

Undo	is not generally available directly from the Edit menu, however the shortcut (control-z) can be used when editing text in the procedure panel.
Cut	is used to cut any selected text to the system clipboard.
Copy	is used to copy any selected text to the system clipboard.
Paste	is used to paste the text contents of the system clipboard.

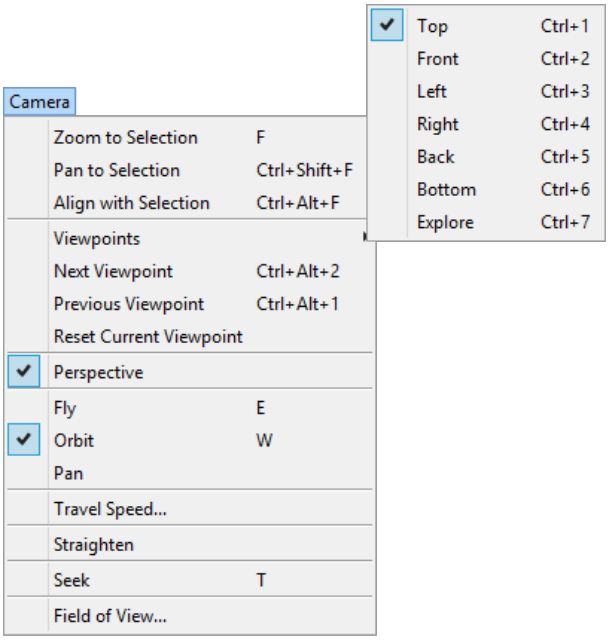
Set Password…	is used to change your password (see Changing Your Password).
Preferences…	are used to open the Preferences Window (see The Preferences Window for usage information).

7.3 View Menu



Show Background	is used to toggle between a user-defined background colour for the 3D view and a plain white background (see Setting the Background Colour)
Set Background Colour…	is used to set the user-defined background colour for the 3D view (see Setting the Background Colour)
Show Grid	is used to toggle a visual grid (see Using the Visual Grid)
Grid Options…	is used to configure the visual grid (see Using the Visual Grid)
Show Annotations	is used to show/hide the visualisation of the annotations (see Show Annotations)
Show Name of Selection	is used to show/hide the name of the selected object
Show Compass	is used to show/hide the virtual compass (see Using the Virtual Compass)
Show Camera Pivot Point (Orbit)	is used to show/hide the pivot point when using orbit mode (see Using the Orbit Navigation)
Default Lighting	is used to enable/disable default lighting in the 3D scene. Turn this off if your scene is lit by objects from the Model Bank or by lights in the room itself

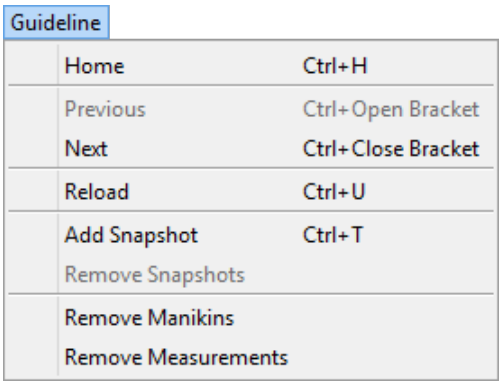
7.4 Camera Menu



The Camera menu consists of features for aiding navigation as well as management of viewpoints and other camera related properties such as perspective projection and field of view.

Zoom To Selection	is used to fit the view to the currently selected objects (see Zooming camera to selection)
Pan To Selection	is used to centre the camera over the currently selected objects (see Centring camera on selection).
Align to Selection	is used to align the camera to the current selected objects (see Aligning camera to selection).
Viewpoints	is used to select which viewpoint should be active (see Viewpoints)
Next Viewpoint	is used to switch to the next viewpoint in the viewpoint list (see Viewpoints)
Previous Viewpoint	is used to switch to the previous viewpoint in the viewpoint list (see Viewpoints)
Reset Current Viewpoint	is used to reset the current viewpoint back to the position and orientation it had when the layout was opened (see Viewpoints)
Perspective	is used to change perspective projection of the camera between perspective and orthographic (see Changing Perspective Projection)
Fly	is used to select Fly mode (see Using the Fly Navigation)
Orbit	is used to select Orbit mode (see Using the Orbit Navigation)
Pan	is used to select Pan mode (see Using the Pan Navigation)
Travel Speed…	is used to change the movement speed when using Fly mode (see Using the Fly Navigation)
Straighten	is used to level the camera relative to the ground (see Using Straighten)
Seek	is used to move the view closer to a point clicked on in the scene (see Using the Seek Button)
Field of View…	is used to change the field of view of the camera (see Changing the Field of View)

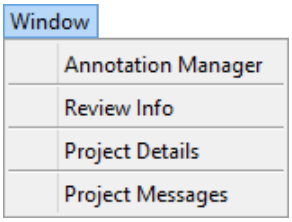
7.5 Guideline Menu



The Guideline menu provides functionality for navigating within guideline sets as well as forcing a reload of the currently displayed data. All of the available items in the Guideline menu have keyboard shortcuts (shown to the right of the menu items above). See Browsing Review Guidelines for details.

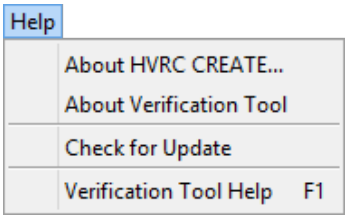
Home	is used to go the guideline set index page.
Previous	is used to go the previous guideline in a set. This item is only available if you are not viewing the index page and the current guideline is not the first guideline in the set.
Next	is used to go the next guideline in a set. This item is only available if you are not viewing the index page and the current guideline is not the last guideline in the set.
Reload	is used to force the Verification Tool to reload the guideline data for the current guideline. It can be useful if the guideline failed to load successfully for some reason. You can also force a reload by going to the previous or next guideline and then going back to where you were. Serious problems loading and displaying guidelines may be the result of errors in the HTML code in which case you should consider exporting the guideline set and checking the HTML code for errors.
Add Snapshot	is used to add a snapshot to the current review guideline (see Adding a snapshot to a review)
Remove Snapshots	is used to remove all snapshots for the current review guideline (see Deleting a snapshot)
Remove Manikins	is used to clear all manikins placed in the 3D scene by the user (see Using the Manikin Tools)
Remove Measurements	is used to clear all measurements placed in the 3D scene by the user (see Using the Measurement Tools)

7.6 Window Menu



Annotation Manager	is used to edit or add annotations for this layout (see Annotations)
Review Info	is used to display information about the current review (see Viewing information about the current review)
Project Details	is used to view information about the project (see Viewing information about the project).
Project Messages	is used to communicate back and forth in the project or design (see Communicating with other project team members).

7.7 Help Menu

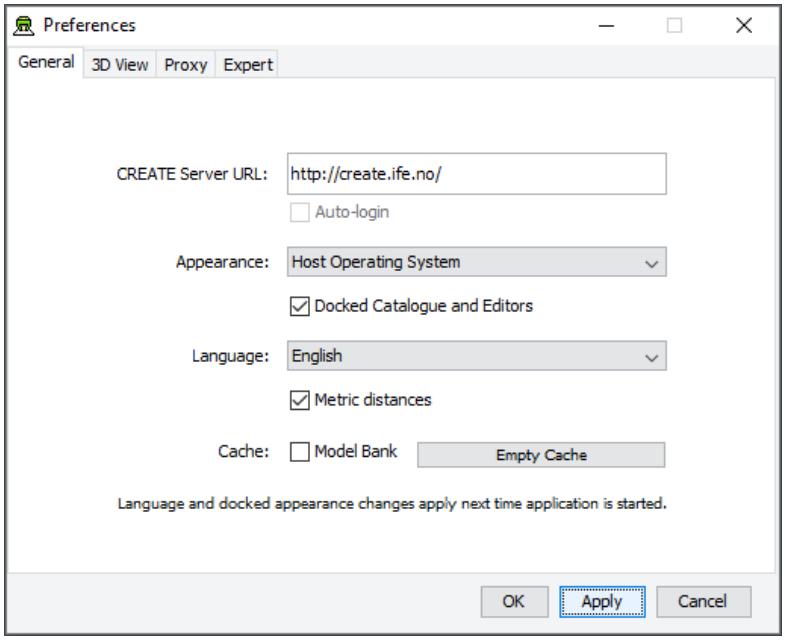


The Help menu provides access to copyright information about this software and to online help.

About HVRC CREATE…	is used to display copyright information about the CREATE tool suite.
About Verification Tool…	Display technical information about this tool. This also provides access to the log file. If you are using macOS then this menu item is located in the application menu ("Verification Tool")
Check for Update	is used to check if the latest version of this tool is being used.
Verification Tool Help	is used to access the online user guide for the Verification Tool.

8 Configuration

8.1 The Preferences Window



The Preferences Window

The first time you use one of the CREATE tools you will normally be presented with a wizard that assists you in setting the configuration options that you need to get started using HVRC CREATE. Subsequently, you can adjust your personal configuration via the options in the Preferences Window.

The Preferences Window can be accessed from the main menu bar's Edit > Preferences… menu item. The keyboard shortcut to open the Preferences Window is ctrl-comma (or command-comma).

Changes to preferences are global and therefore affect all CREATE tools that you use, however they are also personal and will not affect any other users of CREATE that share a computer as long as you are not sharing a computer user account.

There are four sets of preferences in the Preferences Window, the most important of which is the "General" set, which is used to enter the address of the CREATE server that will be used. The individual sets and the options they contain are described in the subsections below.

The Preferences Window has three buttons:

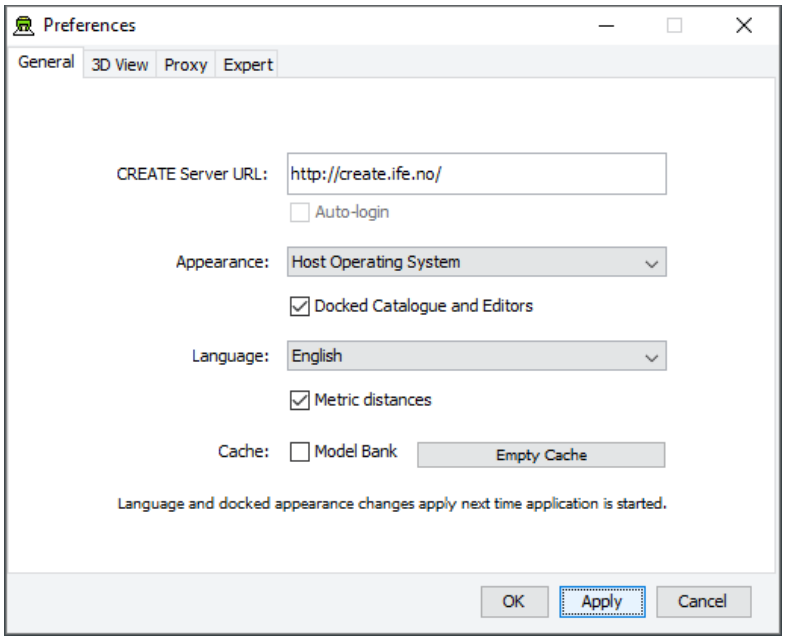
- OK is used to update the preferences and close the window
- Apply is used to set the update the preferences but not close the window
- Cancel is used to dismiss the window without making any changes

Clicking Apply followed by Cancel is equivalent to clicking OK.

A configuration file containing your preferences is created in your home directory and will be applied the next time you run a CREATE tool.

Closing the window by clicking on the close box (top right of the window) is equivalent to clicking on the Cancel button. Hitting the escape key is also equivalent to clicking on the Cancel button.

8.1.1 General Preferences



The General Preferences section of the Preferences Window with server create.ife.no set

The General Preferences section of the Preference Window is used to set the CREATE server URL, to specify the appearance of the CREATE tools, and to toggle caching to local disk of 3D models in the Model Bank.

Important information about changing the server URL:

- In general, it is recommended that you change the server URL setting either immediately after starting up a tool or immediately after saving any unfinished work to the current server, to avoid any risk of data loss before switching to a different server.
- If you are behind a firewall and are using a proxy server to access the internet then you should also refer to Proxy Preferences – section 8.1.3 if you need to access a CREATE server that is not on your local network (e.g. to access the demonstration server on `create.ife.no`).

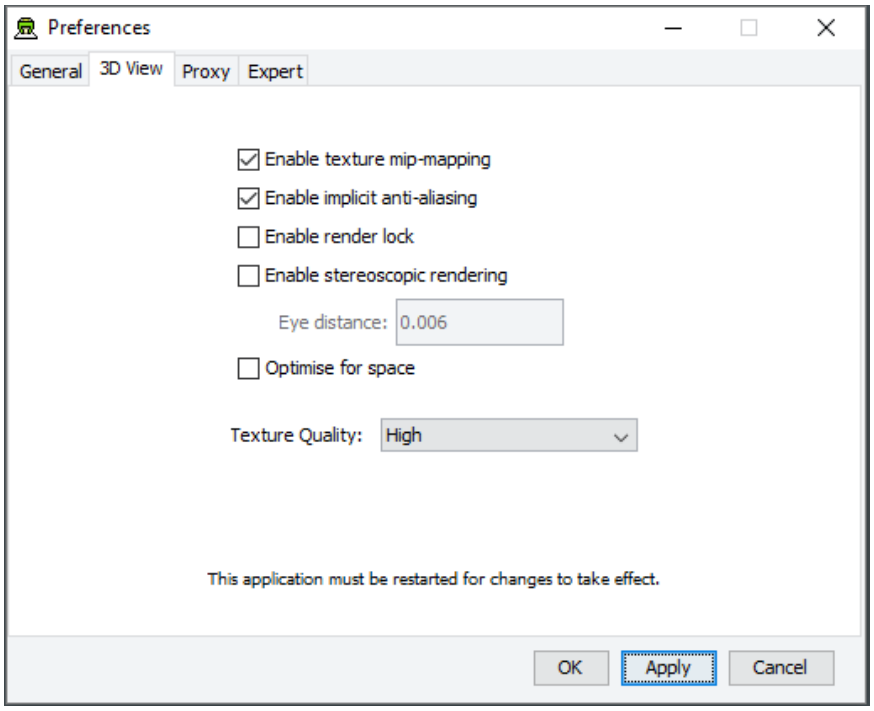
If some features of the tool are not working correctly and the software is reporting server access errors then the reason may be that the server is incorrectly configured, in which case you should report this to your CREATE server administrator.

The General options are described below:

CREATE Server URL	The server URL is the Web address of the CREATE server where all CREATE system and project data is stored. It is shared by all of the tools. If you attempt to modify the server URL then you will be asked to confirm the change. Changing the server URL to a non-existent host will render the tools unusable until a valid host URL has been entered. Changing the server URL before saving any work that has been done during the current work session will result in any unsaved data being lost. **Important: See notes above regarding changing the URL.**
Auto-login	If you are logged onto a CREATE Server then this option will be enabled. Once enabled, you can select it to indicate that you would like the tools to remember your user name and password for the current server and use it to automatically log on to the server at any time where you would otherwise be prompted to enter user name and password. The password is stored in encrypted form in the create preferences file for security reasons.

Appearance	The default Appearance is that of the host operating system. The host operating system appearance normally gives the CREATE Tools a look similar to that of other applications on your computer. The cross-platform setting provides a consistent user interface look and feel regardless of whether you are running the software on Windows, Linux, Mac macOS, or some other operating system.
Docked Catalogue and Editors	This option (currently only used by the Layout Tool) causes the Model Bank Catalogue and Editors side panels to be detached from the main application window. When detached, the panels appear as floating windows that can be moved freely around your computer screen. This is especially useful if you have multiple displays attached to your computer as you can then move the Catalogue and Editor panels to a different display, giving more space to work with the 3D view on your main display. This option takes effect the next time the Layout Tool is started.
Language	The text of the HVRC CREATE tools user interfaces can be displayed in English, US English, French or Norwegian. By default this option is set to system default, enabling the software to select the language automatically depending on your operating system language settings. However, you can also select the language specifically. For example, this can be useful if you are working on an international project where English is the project language, but your personal computer is otherwise configured to use a non-English language.
Metric distances	If you want distances to be displayed using U.S. measurement units then you can turn this option off, otherwise distances are displayed in metric units.
Cache	If Model Bank caching is enabled then frequently used models load faster as copies of the models are read from the local hard drive, rather than transferred over the network, each time the model is loaded. The effect of this depends on the speed of the network and the size of the models. The greatest benefit of using caching is achieved when frequently accessing models over a slow connection to a server. Since the model cache is stored on the local disk, it is important that there is sufficient disk space (a few megabytes is usually sufficient) and that you are not using an insecure computer and an insecure user account to access the models (from which the cached models could be copied). Pressing “Empty Cache” deletes the data in your local cache, freeing up disk space. Caveat: If you are using a computer where your home directory is on a server (rather than stored locally on the computer that you are using) then turning on the cache may actually slow down the loading of Model Bank data, if the network connection to the CREATE Server is not significantly slower than the connection to your home directory. **We do not recommend turning on the cache if your home directory is on a network server.**

8.1.2 3D View Preferences



The 3D View Preferences section of the Preferences Window

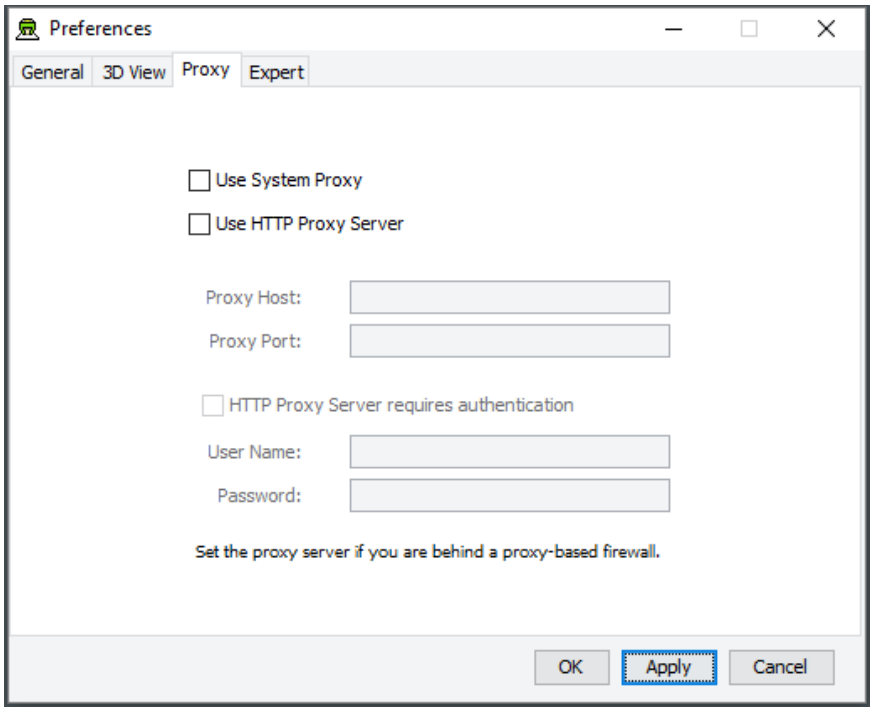
The 3D View Preferences are only applicable to the tools that display 3D graphics, and offer control over the way in which the 3D graphics are rendered. These options generally have no effect until the application has been restarted as the affect the way in which the 3D view is initialised.

The 3D View options are described below.

Enable texture mip-mapping	Enable generation of multi-resolution textures when textured models are loaded. This option improves the appearance and performance of textures, however some older graphics cards may not support this feature and the loading of textured models may be significantly slower if this option is enabled.
Enable implicit anti-aliasing	Allow the display driver to control full-screen anti-aliasing settings. If you have a graphics card with support for anti-aliased rendering then this option enables will cause the tool to acknowledge your anti-aliasing set-up. This option can greatly improve the visual appearance of the 3D view but there may be a performance impact, and some older graphics cards may not support this feature.
Enable stereoscopic rendering	Enable initialisation of 3D views in stereo mode. This option will only have an effect if you have a graphics card that supports active stereoscopic rendering. Unless you are actually using stereoscopic hardware, you should not enable this option as stereoscopic rendering will decrease the overall performance of the 3D view as it requires more effort of the graphics card. Default off.
Enable render lock	Controls rendering execution. Try changing this if you have driver problems. In general, you should leave it off. This option is offered only because it can resolve graphics driver problems in some special cases. Default off.
Optimize for space	Optimize 3D geometry to use less memory at the expense of slower performance. Disable this if you need to squeeze out a little more performance. In most cases the difference is unperceivable so we recommend leaving it on. Default on.

Texture Quality	If your layouts contain many high-resolution image surface parametric objects then you may reach a point where the rendering performance degrades significantly as you run out of memory on the GPU. You can improve performance by reducing the maximum quality used for texture rendering. Note that the images themselves are always stored at high resolution within CREATE so this only affects their appearance (both in the 3D view and when exporting 2D images). You can safely work with this set to Low if you want to maximise performance while working on a design, and increase it when you are ready to output high quality images. Default is High.

8.1.3 Proxy Preferences



The Proxy Preferences section of the Preferences Window

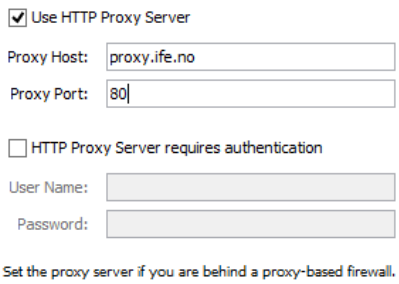
If you are behind a firewall and are using a web proxy server to access the Internet then you will need to configure the CREATE tools to use a proxy server if you wish to access a CREATE server that is not on your local network (e.g. to access the demonstration server on create.ife.no).

To enable proxy support, check the Use HTTP Proxy Server option, enter the server address (without entering `http://` in front of it and without any trailing slashes) in the Proxy Server field and the port number in the Port field. If you leave the port field blank then the default port (80) will be used.

To disable proxy support, uncheck the Use HTTP Proxy Server option.

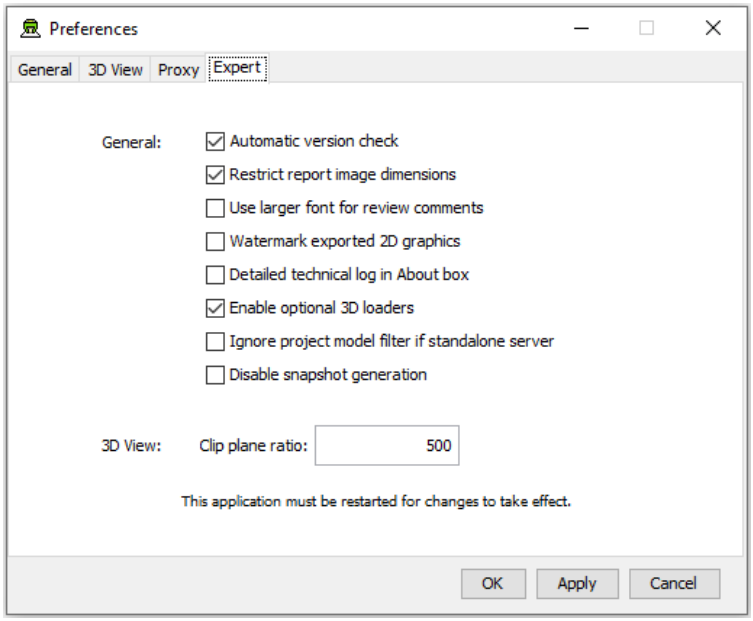
If necessary, select Proxy Server Requires Authentication and enter your network (i.e. not CREATE) user name and password.

Note that changing these items while in the middle of doing work with a CREATE tool is not recommended. Change these settings immediately after starting up a tool or after saving any unfinished work to avoid any risk of data loss.



Example of a filled-in Proxy Preferences section of the Preferences Window

8.1.4 Expert Preferences



The Expert Preferences section of the Preferences Window

The Expert preferences provide access to additional options, described below.

Automatic version check	Turn off the automatic daily checking for a new release of the HVRC CREATE Tools. If you turn this off then you will not be informed automatically of new updates, but can still check for updates manually via the Help-menu (Help > Check for Update). Default on.
Restrict report image dimensions	In versions of CREATE up to 4.0, snapshots of the 3D view added to reports in the Verification Tool were exact duplicates of the image in the 3D view, with the same resolution and aspect. From CREATE 4.0, the snapshots are taken with a consistent aspect to always fit neatly into a report page, with landscape or portrait format depending on the current 3D view aspect. Default on.
Use larger font for review comments	When using a non-Latin character set for entering review comments or procedures, some users may find the text easier to read if a large font is used than the system default size. Default off.
Watermark exported 2D graphics	If this option is enabled then “HVRC CREATE” and the name of the licensee is inserted at the top left on exported images. In the demo version of CREATE then this cannot be turned off. Default off.

Detailed technical log in About box	Select to enable detailed technical logging of system behaviour in the log in the About box. This is useful for troubleshooting if you experience technical issues with the software, and you need to contact CREATE support for assistance. Enabling this option has a small negative effect on the system performance. Default off.
Enable optional 3D loaders	Select to enable 3D loaders, to support importing 3D models in glTF, LWO, OBJ, PLY, and SCENE (Ogre3D) formats. These are described as optional as they are not guaranteed to load all files in those formats correctly but are useful as they can load most files in those formats. Saving your work before attempting to import a model for the first time in one of these formats is recommend. Default on.
Clip plane ratio	If you experience tearing effects in the 3D view then this may be because your graphics processor is unable to draw surfaces that are close together with sufficient accuracy. Reducing this number may minimise that effect, although at the cost of not being able to view near surfaces as closely. Similarly, if you are not having any problems with tearing then you might want to try increasing this number in order to be able to move even closer to surfaces before they disappear from view. A ratio of 1000 is a good choice for most modern discrete graphics cards. Default is 500.
Ignore project model filter if standalone server	If you are using a standalone CREATE Server (as opposed to a networked server), on the same machine that you are running the CREATE Tools on, then you can opt to ignore any project level model filters set for the Model Bank. This makes all categories and models visible in the Layout Tool regardless of any filters that have been specified using the Project Management Tool. If you are the only user of the server then this can be useful as you will see all new categories added to the Model Bank without having to update the project context using the Project Management Tool. Default is off.
Disable snapshot generation	Enable a partial workaround to enable CREATE 3D tools to run on hardware that does not fully support the 3D hardware minimum requirements. Default is off.